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Medical Problems in North Carolina

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RALEIGH

The medical problems of North Carolina have a geographical, historical and economic setting. Our diseases are largely those of the north temperate zone in which we live. Our population in 1760 consisted of 45,000 English, 40,000 Scotch, 15,000 Germans, and 31,000 Negroes. Our racial stock for the white race was entirely northern European, and was second to none. Today our population numbers 3,500,000, of which Negroes comprise about one third. In 1865 three hundred and fifty thousand Negro slaves were set free. Economic collapse followed the Civil War, and the military rule which followed lasted three years. The Negroes were poverty stricken, ignorant, and had selfish and bad leadership. The large plantations were broken up and a system of farm tenancy or share cropping came into being and has been imposed on the state ever since. Under this system of agriculture money crops, cotton and tobacco, were practically the only ones raised. Only a limited amount of food crops, entirely insufficient in amount and content of nutritional values, were cultivated. Poor prices prevailed, and the small farmer became more and more impoverished. Nutritional diseases which formerly had not existed came into being. Poor housing, lack of screens, bad water supplies, indifferent sanitary conveniences have made this numerical majority of our people susceptible to all types of disease. Two thirds of our people were rural dwellers in 1931. Their birth and death rates have been high. The Negro birth rate for 1939 was 24.2 per thousand, and the death rate was 11.1 per thousand. The white rate was 21.4 per thousand for births and 8.1 for deaths. According to the census figures of 1930 there was a total of 33,564 deaths in North Carolina. Of these, 7,494 were children under 10. In the United States as a whole in the same year there were 1,381,394 deaths, of which 162,996 were under 10 years of age. Thus in North Carolina the death rate for children under 10 was 22.3 per cent, and in the United States only 11.8 per cent. It has been estimated that 75 per cent of the deaths of children are preventable. In 1940 we had 119 deaths from diphtheria, a preventable disease, and one against which the law requires vaccination. On September 3, 1940, there were 17,150 crippled children on the state register for orthopedic care. Approximately one third of our blind are the children of blind parents, and in the majority of instances are dependent on the charity of the communities in which they reside. In 1939 there were 78,957 births registered in North Carolina. Of this number 6,503 were illegitimate. Since 1900 there has been an improvement in education, transportation, and agriculture. With this increased prosperity has come a vast betterment of health conditions in the state, but the low income groups still comprise the majority of our population. They are the ones most in need of medical care, and their economic condition is such that the food which they have and the surroundings in which they live prevent them from responding properly when medical care alone is furnished them. I cite these facts as a background for the medical problems which face us today.

President's address to the Medical Society of the State of North Carolina, First General Session, Pinehurst, May 20, 1941.

The human race has developed through the countless ages under the laws of heredity by the survival of the fittest. The weak and defective have perished. Only the physically strong and mentally alert could withstand the severe conditions of early life and survive to become the mothers and fathers of the next generation. Modern civilization, human sympathy and charity have intervened in nature's plan. The weak and defective are now nursed to maturity and produce their kind. Under nature's plan we breed principally from the top. Today we breed from the top and bottom, but more rapidly from the bottom. Today the most intelligent and efficient, the strongest strains of blood, as a rule, limit their children to a point that means extinction of a family in a few generations. In North Carolina only three hundred and fifty people were sterilized in the last two years. The laws should be broadened and transmittors of hereditary diseases, the hereditarily blind, and many more mental defectives should be included. The criminal insane and the repeaters in our prisons could well be put into this classification. Over half of our 12,000 prison and penitentiary inmates are repeaters and are infected with venereal diseases on admission. If we accept the intelligence quotient of 70 as an index of the test of mental deficiency, it is estimated that we will find 58,549 mentally handicapped children in North Carolina. Maladjustment in school and after-life is inevitable in this group, which comprises about 5 per cent of the children in the state. The fact that there is no definite or special program for the defective in the state school program contributes to delinquency. Many juvenile delinquents come into the courts. The large proportion of the Negroes are laborers—usually of the farm tenant class —or else are crowded into the towns and living in poverty. They are becoming increasingly susceptible to the two chronic diseases which most commonly affect mankind —tuberculosis and syphilis. Many other constitutional, mental, and hereditary diseases follow in the train of these two. In 1500 the great prevalence of syphilis in Italy and France changed the whole life and the map of southern Europe. It may well affect the Negro race in the same way. This condition is also bound to have an adverse effect on the white race. The close proximity of the two races will increase the prevalence of these diseases among the whites. A further extension of birth control information to this group which breeds from the bottom is a necessity. Over 30 per cent of the men of military age examined for the draft have been declined for service because of defects, either congenital or acquired. This is further evidence that we are breeding from the bottom instead of the top. It is an irrefutable biological fact that a damaged germ plasm produces weakened tissues in the human body. Nutritional diseases, syphilis, mental diseases, alcohol, and poverty are weakening the germ plasms of our people.

We have an increasing number of mentally ill in North Carolina, and a rising tide of mental hospital commitments. Until now our effort has been to give these patients institutional care, and but little concentrated or directed effort has been made to eradicate mental sickness at its very beginning. In 1933 only five states in the Union had a greater ratio of patients to personnel in mental hospitals than North Carolina. Our state's average is 10.8 to 1, while in the United States the average was 6.6 to 1. A hospital approved by the American Psychiatric Association has one physician to every 150 patients. Early admission after diagnosis means a shorter stay in a mental hospital, with much better prospects of cure. Over half of the patients admitted to mental hospitals have been ill for a year or more before admission. Our three mental hospitals are crowded and there are waiting lists. The proportion of inebriates in our hospital population is higher than in many other states. The successful fight to conquer pulmonary tuberculosis furnishes the outline of a campaign which could be used to combat mental disease. Where such a plan has been tried brilliant results have been achieved. Our state mental health needs to be and could be improved by more generous contributions from the state, thus enabling us to do preventive work as well as increasing our facilities and personnel for treating those already ill.

We are familiar with the estimates which have been made of the enormous amount of free work and service rendered by the generous, hard working practitioners of the nation, but we cannot be sure that this vast amount of charity is dispensed in a way that is best for the patient or the doctor. It is admitted that it is nearly always possible to hospitalize and treat those patients with acute emergency conditions or far advanced

illnesses. Frequently, however, these are the patients who require the least study. The many patients not ill enough for hospital study are the ones who present the major diagnostic problems. Nearly two thirds of the individuals in this country are in families with an annual income of less than $1500 a year, and half of these must live on $800 a year. Those in the upper brackets of these groups can afford medical care; those in the lower brackets can pay for only a part of their medical needs, or for none at all. Medical and surgical care is now being offered to low income groups by several well managed and financially sound hospital insurance associations now in successful operation in North Carolina. A large number of individuals and groups of individuals carry this insurance. The Medical Society of the State of North Carolina has nothing in its Constitution and By-Laws prohibiting this type of service, provided it is endorsed by the medical society in the county where it is to be put in practice. Doubtless, the fields and endeavors of these associations will be broadened to meet the needs of the times.

In 1939 North Carolina ranked forty-fifth in the United States in hospital beds of all kinds, having 5.05 beds per 1000 inhabitants. In 1936 North Carolina ranked forty-sixth among the states in the ratio of physicians to population, with one practicing physician per 1,346 inhabitants. Durham county has one practicing physician for every 261 inhabitants; Tyrell has one for every 5,164 inhabitants. There are 141 colored physicians in the state. In the fourteen counties in which they serve they represent one physician for every 5,890 of the rural population, and one for every 1,699 of the urban population. The other fifty-six counties without negro physicians contain 88,105 Negroes. The problem for North Carolina is how to meet the medical needs of our state. We cannot redistribute our physicians, as economic and scientific factors influence their location. The state of Georgia, which has a distribution of population somewhat similar to our own, has proposed legislation to finance the education of physicians who obligate themselves to practice for four years after graduation in communities assigned to them by the medical authorities of the state.

The care of the indigent is, of course, the weakest point in our program. No country has as yet found a real solution to the problem of providing equal medical care to a population with incomes ranging from indigency to affluence. Compulsory insurance to take care of sickness meets a small part of the problem by giving the low income groups a superficial service paid for by distributing the burden over both well and sick, and among employees, employers, and the government, but it leaves the indigent untouched. There is a growing class of medically indigent in North Carolina. Some are worthy; many are not. Good food, good housing, and good sanitation are lacking among them. These things are fundamental to good health and useful citizenship. To meet the problems these families present, it is necessary to have generous appropriations of tax funds spent under trained medical supervision and through medical centers, and an expanded plan of cooperation between health officers and local medical societies. Subsidies and grants to pay reasonable medical fees, to establish new hospitals, and to maintain and improve old ones seem imperative to a balanced program to care for the diseased and to rehabilitate the indigent. State medicine, as largely public health medicine, is not free medicine, for it is paid for by the money collected from taxpayers of the state and nation. State medicine reaches a class of citizens who would not otherwise receive medical care, and who would spread the disease among themselves to other people. This virtue alone would justify state medicine, but it is more far reaching than this. In practicing preventive medicine, it is in many instances also practicing curative medicine. The sum of $875,169 was made available by the federal government in 1940 to the North Carolina State Board of Health. In 1939 the Legislature allotted a total of $438,370 to the State Board of Health. On the basis of a population of 3,500,000 people, a breakdown of the $1,313,000 in tax money from all sources entrusted to our excellent State Board of Health for all health services allows only 37 cents per person for the year. This does not include the grant of $1,300,000 to the eleemosynary institutions. However, only a part of this sum is spent for medical care. There are nineteen counties in the state without a whole time health department. The State Board of Health reports that in 1940 there were 22,140 new cases of venereal diseases reported. There are now 36,000 active cases

of syphilis under treatment in public health clinics in North Carolina. The incidence of syphilis in North Carolina is 40 to 50 per thousand among the whites, and 150 to 180 per thousand among the Negroes. In a recent survey of draft registrants in Harnett County there was an incidence of 218 per thousand for the Negroes. Syphilis, like tuberculosis, is a chronic disease, and the factors which favorably influence a cure are the same in both diseases—namely, rest and good food rich in vitamin and nutritional values. Most cases of syphilis are advanced when treatment begins in the clinics. The State Board of Health reports that over one half of the new cases in March were latent when treatment began. It is difficult for the clinic attendants to enforce sufficient treatment to produce a cure. The economic status of these people does not enable them to get proper food and rest along with the treatment. This contributes to the high death rate from cardiovascular disease and other diseases in the state. The prevalence of gonorrhea and syphilis unquestionably will be a factor in lowering the birth rate and increasing morbidity and mortality rates. A problem of national importance is that of protecting men coming from the New England states, where the incidence of syphilis is low (80 per 1000) to army camps in a state like ours where the incidence of syphilis is high. The venereal disease rate in any army camp is a reflection of the conditions in the communities surrounding a camp.

I call your attention to these problems and facts because they exist as fields of useful medical endeavor. I do not mean to infer that they are not being attacked, because they are, and by the best medical brains of North Carolina. Each year progress is being made. May I supply one example: The death rate from tuberculosis in North Carolina has dropped from first place to eighth. It is beyond the scope of a paper of this type to give a recital of all of our efforts and accomplishments. Suffice it to say here that the State Board of Health, which ranks high in the nation, is now sponsoring a total of 496 clinics in the state, including 20 for crippled children, and 190 for maternity and infancy care. There are many free private clinics which are doing notable work. The picture is not altogether dark, for we are becoming aware of our weaknesses, and have made progress in fighting them. For the past fifty years we have had not only more wealth with which to carry on the fight, but a more enlightened and intelligent leadership, and an awakened public conscience.

FITNESS FOR THE NATIONAL EMERGENCY

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NEW YORK

On January 20, 1941, the curtain rose on the first act of a new American drama. The President of the United States pronounced the prologue, making history as the only American to appear for the third time in this stellar role.

No actor ever addressed so large an audience. The ears of all the world were strained to catch the meaning of a message delivered from a stage setting dominated by soldiers and the grim paraphernalia of war. Whatever its portent, it was a message delivered at one of the most serious moments in our history.

There is so much to be done in organizing for peace, or for war, that every man, woman and child is stimulated to adjustment to new ways of life.

We are not the same carefree people that we were before the sixteenth of October, 1940. The inexorable hand of conscription has turned the door handle of every home, of every occupation, of every industry and of every profession. The plans of youth are dislocated; added burdens are laid upon all workers; and the placid dreams of age are troubled.

We have once more tuned our radios to foreign wave lengths and turned watchful eyes upon our domestic order. We know that acquisitive eyes are studying every move which may contribute material advantage.

We know that world civilization is sick and needs physicians who are competent to cure the hysterias of cruelty, of fear and of despair and discontent.

We are confronted by the immediate necessity for organizing our own defenses.

I presume that no one in this room believes that New York City will be attacked, and yet, careful studies made by military experts show that attacks are possible. As a consequence the departments of Police,

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Read before the Eighth District Medical Society, Winston-Salem, April 16, 1941.

Fire, Health, Hospitals, Transportation, Water Supply and others have already blueprinted defensive measures which they will be ready to use if needed. Home guards of men older than draft age are already drilling to meet local emergencies.

One of the important necessities will be coordinating central agencies for directing volunteer activities, as well as guiding the cooperative work of all lay and professional people in times of crises if they come. Every group will have local assignments and there must be a centralized directing authority.

The Committee on Preparedness of the American Medical Association has been at work ten months, and the Social Security Administrator Paul McNutt is the health coordinator for the National Government.

It seems almost too obvious to repeat to so intelligent an audience that the British Navy will be our first line of defense, if it survives the world catastrophe. The second line is a straight line, drawn on the map from Saint John's, Newfoundland, where American soldiers are already stationed, to Bermuda.

Great cities on the Atlantic coast will be defended by our own Navy, but attacks from the air might make us very uncomfortable. The Transportation Department has already measured every possible accommodation in New York City subways as shelters from bombs. The Department of Health and of Hospitals have measured all of their facilities.

Since we have come to a time when every health agency must be mobilized for national defense, we must push forward with objective planning.

Organized American Medicine is one hundred and eighty-eight years old — dating from the organization of the first hospital in Philadelphia in 1752—, and has always labored to protect the health of the people. Medical services inspired by medical societies have followed lines developed by local needs, such as those for handling communicable diseases, or for hospitalization.

Medical services for the general needs of the public health have been set up, as demands appeared, in one governmental agency after another, but without any long vision of the whole problem. A mass of duplicating machinery has resulted which hampers efficiency.

We have come to a place where a new setup seems to be necessary. Just now the national emergency seems to have created conditions which will be made the excuse for jumping into hastily conceived plans.

Health conditions in training camps seem to be demanding hospital provisions which should have been a first thought instead of an afterthought. Toughening young conscripts by exposure is likely to be an expensive experiment.

The Wagner-George Hospital Bill has been reintroduced without the help of medical men in framing this new proposal. Will the Senator always look to social theorists to write his legislation for him?

Senator Capper's compulsory health insurance bill has been introduced; and other measures designed to enlist emotional support of extravagant spending need careful watching lest they destroy the American system of medical care.

May I ask you to take this matter seriously and look to the medical profession instead of to professional politicians to write the health program for America. You are justified in expecting the education and experience of the medical profession to evolve new procedures for the delivery of better medical services.

Conscription of the youth of our country for military training, conscription of industry to transform itself into an arsenal to supply military machinery, immediately raises the question of the physical fitness of Americans to meet a national emergency. Physical fitness must be ascertained and must be maintained.

The Federal Government turns with confidence to organized medicine for help in organizing the national man-power. Careful daily collection of classified information through many years concerning medical personnel is quickly available and is given with patriotic enthusiasm.

Ninety-five years of fighting for the honest application of scientific knowledge to the demands of health for all people has carried the American Medical Association to the strongest position among medical organizations.

Although its membership represents every shade of political complexion, partisanship has never dominated its patriotism. Its horizons extend far beyond election days. It will not compromise with political expediency. It will not desert the idealism that has carried it through many crises. It

is preparing for the defense of Americanism against the attacks of paganism. It is preparing for maintenance of an advanced democracy unhampered by the subversive influence of foreign autocracies. It fights for the supremacy of the American way of life.

Although every type of religionist is included in its roster, it looks to all of them for loyalty to one ideal of protection and promotion of human health. Cherishing the highest ideals of the most learned profession, it will not surrender to paganistic nihilism. It respects all religionists who are loyal to their beliefs.

Serving every social level, it sympathizes warmly with all who are physically or mentally unfortunate.

Although its membership represents the descendants of every race, its fundamental interests are American. Recognizing the cosmopolitan character of a nation built from its beginnings by refugees from persecutions and intolerances, its hospitality has been continuously generous toward the mental and religious attitudes of the more recent seekers for freedom in our country.

Although it respects the natural affection of newcomers for the traditions under which their life patterns have been formed, it believes that all should adapt themselves as soon as possible to national programs which have evolved the American way of life, and should cooperate in its growth and improvement.

Although the American Medical Association may be justified in pride of accomplishment, it is not prejudiced against any earnest approach to new solutions of administrative or scientific problems. It welcomes the restless spirit of scientific adventure, and encourages it. It has spent more than a million dollars in research in the last twenty-five years. At the same time, however, it has been inflexible in its disapproval of those who would profit from the credulity of ignorance. It has never sold out to commercialism. It believes that Americanism is worth while. It cherishes the ideals of orderly democracy. It despises the devious ways of disloyal propagandists, not only in the field of medical service, but in civic life.

The Health Program of the American Medical Association is an evolutionary development which fortunately escaped in large measure the acquisitive eye of the log rolling politician until the last few years, when job seekers, awakening to the possibilities of expanding bureaucracies, began stimulating the superficial humanitarianisms of political leaders. As a consequence the problem of the future health of all our people is being attacked by amateurs who know nothing about the personal practice of medicine and who know about mass medicine only from superficial observation of foreign systems, none of which have improved the quality of medical care or have produced anything superior to our present system in the United States in 1941.

No one claims perfection for our system of delivery of medical care, but all of you know that the American Medical Association has been working for ninety-five years to improve it, and that its chief concern is better health for all our people. We have good reason to be proud of the fact that the science of medicine has steadily advanced the health of the American people, and that, so far, the legal establishment of any of the foreign systems has been successfully resisted.

In spite of the undisputed fact that American health statistics are unsurpassed the position of the physician in American society has become increasingly difficult, because political theorists have formed pressure groups whose object is to force legislative action to promote governmental control of medical service. The Government in medicine, like the Government in business, is just another step from democracy toward totalitarianism.

The thought of dictatorship in America is revolting. And yet, appeals to popular emotion under the aegis of patriotism, of social security, of pensions, of welfare, of relief of unemployment, or of the people's health have carried many people from confidence in their ability to take care of themselves to belief that they have no personal responsibility for providing the sources of paternalism which they expect to enjoy. They believe that they will drink forever from the inexhaustible wellsprings of government.

Dictatorships have been built on such public sentiment. If such sentiments prevail the medical profession may well expect a fate similar to that which reduced German physicians as well as the German people to economic slavery.

The physicians of the United States have made history. Campaigns against tuberculosis, diphtheria, pneumonia and syphilis

have changed the health statistics of the nation to figures that could not have been predicted twenty years ago.

We know that an intelligent medical profession can educate the people in personal and community health. We know that education has been largely responsible for lowering the mortality from tuberculosis. We know that diphtheria can be entirely eradicated if the people will have enough intelligence to listen to the advice of the doctor and immunize every child. We know that smallpox can be entirely eliminated by universal vaccination. We know that great gains have been made during campaigns against syphilis. We are confident that studies of immunology will salvage more and more people from the ravages of communicable disease.

These have been great years in the warfare of science, and because our frontiers have been so remarkably advanced, we might be justified in predicting greater triumphs, if the future of our civilization were not threatened by social upheavals, the violence of which cannot be foreseen.

We are conscious of the campaign of German sabotage which has been carried on with diplomatic immunity since 1915. We remember the efforts of the brilliant Count Von Bernsdorf to seduce the Wilson administration and the violent sabotage of Von Papen and Captain Boy-ed. The same Von Papen is now operating in Turkey. We know that the same things are going on here at this moment. We know that Russian communism and German socialism have been active here for many years.

We know that the infiltration of foreign thought has fermented discontent in this country so that some Americans have been led into disloyalty and are now working for the destruction of our democracy. We know that American generosity has been so grossly abused that world revolution is being promoted.

The European war has passed its first anniversary and a year of valuable time has been wasted in debating, so that we are just now only at the beginning of preparations for our own defense. Our medical preparedness should have begun to function immediately after our offer to the Government in September, 1939. But muddling partisan politics restrained patriotic action.

At the request of the War Department in June, 1940, the American Medical Association is now actively helping. Questionnaires were sent to 175,000 physicians to discover how willing, how qualified and how loyal they may be. The response of more than 150,000 physicians justifies the traditional devotion of the medical profession to public service.

The Committee on Preparedness is building the skeletal fabric for effective service in every state—not only for active field service, but for service on draft boards and for protection of civilians at home. The profession will be ready when called for.

Meanwhile there must be no relaxation of educational standards in the quality of medical care for our country of the future. The future of medical service should be viewed from high points of idealism, standing upon firm, well established biological foundations. Those who wish to see the highest national health might well work for a selective draft of all our citizens to choose those who may become the parents of future Americans.

Physical fitness must be recognized as an important step toward national fitness. Fifty-two per cent of Americans are said to be physically competent for hard work. This level must be raised if our future is to be viewed with satisfaction. I believe that educators should be urged to turn their minds from sentimental to practical methods of equipping youth for the hard realities of life.

Annual examinations of the apparently healthy have long been advocated with very small results. Physical examinations of children are carefully done in few places. I warmly advocate careful annual examination of every school child and training for physical fitness throughout school life. I believe that such universal study of the school child added to promotion of health through intelligent nutrition and sanitary housing are more important elemental defenses than guns or planes or tanks.

While the common effort in our educational system seeks its objective in a thin veneer of so-called general culture, average abilities for the practicalities of life are neglected. Fear of regimentation seems to restrain school administrators and limits their vision or understanding of the destructive experiences of indulgent self-expression, which seems at this moment to be resulting in a disorderly generation.

Physical training of the physically fit and rehabilitation of the physically unfit is large-

ly the hit or miss concern of undirected individuals. Every school and college in the country should be provided with serious medical consultants, who should be educated and inspired promotors of national health. If every college for women or men would emulate the physical training now carried on at West Point for the next twenty years, we should have thousands of young people physically fit for healthy citizenship and prepared to meet emergencies at home or abroad. We should have many thousands of young people so physically fit that they would be willing to soil their white collars and their strong hands with the work of the world.

For many years we have been discussing ways and means of solving the problems of the unemployed, now claimed to be five million persons. No one seems to know how many of these are physically or morally or mentally unfit or unadjustable to possible demands for their services, but it may be safely assumed on the basis of studies of other groups that more than 30 per cent are physically unfit and many more are unskilled for work that might be offered them in more prosperous seasons.

The President of the United States has said that Americans are soft. He also said that "if we are to survive we cannot be soft in a world in which there are dangers which threaten America — dangers more deadly than were those the pioneers had to face." He also wisely said that the old pioneers "put hard fibre in the American spirit, and strong muscles in the American back."

The selective draft for the war of 1917 and 1918 revealed that from 30 to 40 per cent of those examined were unfit to fight. Have we profited from the lessons of that experience? Statistics of June, 1940, indicate that we have not. Of 2313 applicants examined for voluntary enlistment in the Regular Army, month of June, 1940, Second Corps Area, New York City 762, or 31.2 per cent, were rejected because of defects.

It is claimed that current rejections are based upon higher standards, and that those inducted represent the cream of selective service. In spite of such statements statistics of 1941 are very similar to those of the first world war.

It is obvious that many have been rejected for remediable defects. Insufficient or incompetent *teeth* lead the list. This misfortune can hardly be charged to lack of available dental service in this country. Dentists are ready and willing and able. It must be largely charged to the ignorance and stupidity of careless people. Other remediable defects are hardly the responsibility of physicians, who are always willing to help regardless of compensation. Although there is evidence of increasing popular interest in health, there still is significant failure to penetrate the personal consciousness of a large number of our people.

We are boastful of our great schools and colleges—of our greatly increased literacy, of our vast numbers of college students. We have idealized the life of those in the learned professions. We have educated so many people to wear white collars that there are not enough people who are fit for the skilled mechanical work that we need so much at this time. We have stimulated a false pride in the attainment of college degrees, and dislocated labor by crowding some fields while others are poorly supplied. We have encouraged a complacent snobbery that looks down its nose at productive labor. We have forgotten to teach that healthy existence is built upon practical foundations, and we have paid so little attention to physical fitness that we shall have to draft 3,000,000 men for military service if we shall secure 2,000,000.

Our mental unfitness is illustrated by 500,000 hospital beds occupied by the institutionalized insane. Our social unfitness is illustrated by a half million active syphilitics and a half million migrating indigents—15 per cent of whom are said to have open tuberculosis.

In medical education most of the current writing and thinking has been in the interest of the development of specialties. Here again practicalities are forgotten. I believe a National Health Program would be promoted by the concentration of medical education upon developing good average physicians for average patients.

Hospital facilities will grow to meet the needs of all our people, and if the present interest in transportation prevails, good roads will run to every physical frontier. In the state of New York good roads have brought every citizen within thirty minutes of a physician.

Statistically, the health of the American people measures up to higher standards than are found in any other large nation, but these figures do not satisfy a medical profession which aims still higher.

In advocating a new health program I believe that a National Health Department with a Secretary of Health in the Cabinet is as important as a War Department with a Secretary of War. Defense against disease is as important as defense against a military enemy. Defense of the nation's health is vital to all other defensive forces, but any defensive program will fail to reach its objective unless it is supported by a vigorous offensive which will arouse the public conscience.

Health means so little to most people until it fails or is lost that the first emphasis is on curative therapy; the second on prevention, which attracts minor attention except when given to the prevention of the communicable diseases of children; and last and very little emphasis on the promotion of physical fitness through good nutrition, good housing and physical training.

I believe in eliminating the present confusions and duplications of Washington bureaus by centralizing national health functions. This now seems functionally possible under the leadership of the Social Security Administrator, the Honorable Paul McNutt.

I believe in decentralizing the care of the sick individual by originating his care in the smallest political subdivision, such as a school district, where his real condition is known, and then carrying his necessary call for help to the township, to the county, to the state, in that order—but to the National Government as infrequently as possible.

Our National Government can coordinate nation-wide programs, and our local governments can carry them to successful accomplishment.

The future of our national health is intimately involved in the evolution of our national intelligence. Democracy is Government from within the people themselves. Dictatorship involves the surrender of the people's mind.

There are people who say that American democracy is merely tolerance of unlimited experimentation, with no definite national objective upon which loyal thought can be concentrated. Such an ideal is greatly needed. Call it American Spirit, if you think it so intangible; call it love of home and country; call it love of liberty—whatever it is called it must be so strong that it will irresistibly carry the Stars and Stripes to supreme leadership.

POTASSIUM SULFOCYANATE IN THE TREATMENT OF HYPERTENSION

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In our cardiovascular investigations we have worked on the assumption that there is in the human body a sensitive balance of control of the level of blood pressure. The details of this control are not known. There are many theories, with apparently good support for some of them. Essentially, there is some agreement that there are two substances in the blood, both of which are required to produce a third substance which keeps the tone of the musculature of the arterioles in an active or reactive state, thereby at least helping to control blood pressure and maintaining a normal or abnormal pressure, the level of the pressure depending on the balance between these substances and a depressor substance.

Since high blood pressure is more frequently encountered than low pressure, it appears that nature has provided the stronger arm of the balance for boosting the pressure—that is, that the vasoconstrictor control is stronger than the vasodilator.

While a pressure of 120 systolic, 80 diastolic is accepted as a good average normal pressure, upper and lower limits of normal pressure are ill defined. Sudden, severe rises in pressure are quite rare. After an individual maintains a pressure of 120 systolic, 80 diastolic for many years a pathological rise in pressure will be likely to be gradual rather than sudden. At some point in the gradual rise it should be possible to assume that the pressure is becoming abnormal and to institute remedial treatment without waiting for an extremely high pressure to develop. If a pressure that tends to rise can be returned to normal in the early stages, there is a strong possibility of preventing anatomicopathological changes; when such changes progress sufficiently far, they are irreversible. With no attempt at being arbi-

Presented before the Wake County Medical Society, March 13, 1941. From the Cardiovascular Department of Rex Hospital.

trary, we have looked at all systolic pressures of 130 and diastolic pressures of 90 or above as being open to suspicion; in younger patients we feel that such pressures should ordinarily be considered pathological and an effort made to lower them slightly, if possible, and at least to prevent a further rise. In older people who have become accustomed to a higher pressure, caution must be observed in lowering pressures from any level.

Any studies of blood pressure are handicapped by the failure of patients to seek aid for hypertension until the pressure is pathologically high and attended by vascular changes that make complete recovery difficult or impossible.

We do not like to use the term hypertension as a diagnosis. It is a symptom of disease, and probably rarely, if ever, a disease entity. It may be compared with fever in this respect. It was not so long before our era in medicine that fever was accepted as a diagnosis. Gradually, various causes of fever have been recognized and classified, and fever is no longer the diagnosis, but one of the symptoms of the disease.

There are other factors involved in the control of blood pressure. A normal person with normal blood pressure is not likely to show much variation in the blood pressure level, regardless of extrinsic factors such as emotional upsets. While we have no adequate explanation for the effect of emotions on blood pressure, it might be explained by some influence the adrenal cortex exerts over some of the factors controlling blood pressure. Persons with hypertension usually show other effects of the abnormal physiology responsible for the high pressure. Such patients are often allergic. They are apt to be taut and unable to relax; there is a generalized increased tension that is not limited to the arteriolar musculature.

Depressor Substances

We have studied many substances that might exert depressor effects on the blood pressure. Tissue extracts in general produce foreign protein effects that lower blood pressure. This may be due in part to the effect of potassium sulfocyanate normally present in such tissue extracts. Liver extracts have been used widely for the reduction of blood pressure, but their use has been almost entirely abandoned. Renal extracts are now in favor in some clinics and are meeting with some degree of success[1].

Nitrites and nitrates are present in the blood stream in minute quantities, and have been used for the reduction of blood pressure. However, the action is so fleeting that this form of treatment is not practicable. Nitrites tend to produce headaches if any substantial reduction in pressure is effected. In the blood stream these substances are so unstable that accurate quantitative determinations are difficult. This fact, together with the scarcity of these substances in the blood stream, tends to discredit any practical significance that might be attached to their presence in the blood stream.

Many substances have been exploited for the relief of hypertension, but when used according to our methods of eliminating the results of psychic influences, none of these substances have proved to be potent.

Sulfocyanates

The only anti-pressor substance that is present in the blood in readily demonstrable amounts is the sulfocyanate radical, apparently usually combined with potassium, though possibly also combined with calcium, sodium or magnesium. It is normally present in the fasting blood plasma in amounts varying from .4 to 2.8 mg. per 100 cc. of blood[2].

Hydrocyanic acid is one of the end products of protein metabolism. This is a powerful depressant in any part of the body. On smooth muscle, it produces an immediate paralysis in very low concentrations. However, as hydrocyanic acid is formed in the body, it immediately unites with sulfur, producing a non-toxic compound. This sulfocyanate radical then unites with potassium (or some other mineral), in which form it is active as a depressant to smooth muscle.

In the past, pharmacologists considered sulfocyanates to be inert. Later, Sollmann[3] classified these substances with the iodides as to action in neuroses, in arteriosclerosis and in syphilis.

Apparently, sulfocyanates are formed in the body wherever protein metabolism takes place. This suggests the formation in

1. (a) Corcoran and Page: Arterial Hypertension, J.A.M.A. 116:690 (February 22) 1941.
(b) Page et al.: Reduction of Arterial Blood Pressure of Hypertensive Patients and Animals with Extracts of Kidneys, J. Exper. Med. 73:7 (January 1) 1941.
(c) Munoz, Braun-Menendez, Fasciolo, and Leloir: The Mechanism of Renal Hypertension, Am. J. M. Sc. 200: 608 (November) 1940.
2. Caviness and Bell: Unpublished data.
3. (a) Sollmann: Manual of Pharmacology, ed. 3, Philadelphia, W. B. Saunders Co., p. 909.
(b) Pauli: Sulphocyanides, Muenchen med. Wchnschr., no. 4, 1903.

muscles, but the largest part is formed in the liver and eliminated in the bile, from which it is absorbed into the blood stream along the intestinal tract. Bile contains approximately ten times as much sulfocyanate as other tissues or fluids. Appreciable amounts are found in the saliva, urine, sweat and feces.

Sulfocyanates have been used by few clinicians. There are two reasons for this:

First: There have been reports of unfavorable results, probably from too rapid reduction of the pressure because of excessive dosage and from failure to follow the blood concentration of sulfocyanates.

Second: The principal use of this group of drugs has been in preparing patients for sympathectomies. In these cases, after the operation, the sulfocyanates have usually been discontinued and the diastolic pressure has risen to its former level or higher. This, of itself, prevented any actual benefit to the patient other than some improvement in the sense of well being. The high diastolic pressure tends to produce a so called malignant hypertension and an early death. The patients who took sulfocyanates and had the operations, if they survived the operations, died about as soon as if they had received no treatment.

The Council on Therapy of the American Medical Association in 1929 condemned the use of sulfocyanates; again in an editorial in 1940 the warning against them was repeated[4]. These warnings were entirely justified, and are still needed unless careful checks are kept on the blood level of sulfocyanates.

Evaluation of Vasodilators

In our work during the past few years we have attempted to evaluate each drug used on its own individual merits. We recognize that it is easy to produce a temporary reduction in pressure. The attitude and methods of the physician can raise or lower the pressure. A patient seen recently had been treated by another physician whose statements and manner had raised his systolic pressure from 200 to 260. Reassurance and sedatives lowered the pressure to 180. In our treatments we attempt to set the mind of the patient at ease by explaining to him that the high pressure is not a disease but is a symptom of disease, and that we are sure we shall be able to help him, as we have helped other similar patients.

We also use small doses of sedatives. We have secured better results with small doses of phenobarbital given in the morning than with any other. If the patient can be helped in the morning by calming his hyperactive mental state, he will rest better at night than if only a night dose is given.

There does not appear to be much need to alter the diet materially. Many of our patients have limited selection of foods as well as limited amounts of food. If we ordered special diets for them they might worry so much over their inability to get the ordered diet that the good effects, if any, of the special diet would be lost. We do attempt to limit hog meat, fried foods, salt and other seasonings, and to limit the total amount of the diet to the minimum requirements of the individual patient. Overeating appears to cause more trouble than the types of food eaten.

Individual Treatment

After making a careful study of each case to determine the need and desirability of this type of treatment, we have a talk with the patient and attempt to set his mind at rest regarding his condition. Urinalyses and complete blood counts are made, and when possible studies are made for blood retention of metabolites. Small doses of sedatives are given and the blood pressure is checked later to determine the response secured. Usually a week or two later, when it is determined that no further improvement is to be expected from this preliminary treatment, we give the sulfocyanates if needed. It is not to be inferred that sulfocyanates are required in all cases of hypertension. Relief of anxiety neuroses often lowers pressures to normal. Gastric upsets are at times associated with a moderate rise in pressure which is relieved by correcting the digestive disturbance. Various allergic manifestations are associated with elevated blood pressure, but a return to normal pressure may be seen with relief of the allergic reactions. Any method of treating hypertension, if associated with relief of the underlying causes, might be credited with cure of hypertension. From many published reports, it appears that undue claims for various so-called cures of high blood pressure have been made on this basis. The methods we follow tend to eliminate psychic effects of the treatment,

4. Editorial, J.A.M.A. 114:2391 (June 15) 1940.

and we have attempted to ferret out any cause of hypertension and relieve it before giving potassium sulfocyanate.

We do not use this treatment in all cases of hypertension. We consider cardiac decompensation a contraindication. In such cases, the heart is apparently unable to keep the systolic pressure at a level sufficiently above the diastolic pressure to furnish an adequate volume of circulating blood. We have avoided the use of sulfocyanates in all types of acute inflammation and especially in acute nephritis and in severe renal insufficiency. We have declined to use this treatment in cases in which we could not secure adequate cooperation. We do not consider it safe to use these drugs without making quantitative blood determinations of the sulfocyanate at sufficiently frequent intervals. There is at times a cumulative action which is attended with some danger and which may be associated with inability of the kidneys to eliminate potassium sulfocyanate.

Technique of Blood Determinations

In our determinations of the blood potassium sulfocyanate content, we precipitate the protein with 10 per cent trichloracetic acid solution and filter it. To the filtrate we add ferric nitrate to form red ferric sulfocyanate. Colorimetric comparisons are made with standard solutions of known strength. This method is reasonably accurate for practical purposes. However, for part of our work, especially in determinations of the normal content of blood, we use a special photo-electric colorimetric method.

Dosage

Five grains of potassium sulfocyanate daily after breakfast is used as the initial dose. This dose is continued with the slightly limited diet and sedative for several weeks. During this time, blood determinations of the concentration of potassium sulfocyanate are made weekly, and more often if it appears to be indicated. In almost all cases there is a fall in systolic and diastolic pressures. In cases presenting a low pulse pressure at the beginning of sulfocyanate treatment, a greater drop is to be expected in diastolic pressure than in systolic pressure until the normal ratio has been established. As the very high diastolic pressure falls, giving the myocardium more rest, systolic pressure may rise, thus helping to restore a normal systolic diastolic ratio and thereby giving a normal pulse pressure.

In some cases, as the blood pressure drops, it may be necessary to decrease the dose. This appears to be preferable to stopping the drug. Many patients will show a return to normal blood pressure after a few weeks' treatment, during which the blood potassium sulfocyanate concentration was maintained very little if any above the normal level for patients not on treatment.

Some patients may require an increase in the dose. We do not increase the dose until the pressure has stabilized itself at the lower level effected by the initial dose of sulfocyanate. There are several reasons for this conclusion:

First, it does not appear to be advisable to reduce the pressure too rapidly; too rapid reduction tends to produce headaches.

Second, we do not think it advisable to make any drastic reductions in pressure; were the systolic pressure to drop too near the usual diastolic pressure level, there might not be an adequate circulation of blood. When this occurs in nitrite therapy, the diastolic pressure remains high, and uremia or cardiac failure may result. However, in our potassium sulfocyanate work, no such results have been encountered.

Third, there is a cumulative action by this group of drugs; several days or weeks are required to secure full effects of any dosage, and increasing the dose before its full effect has been secured would produce a more rapid drop in pressure than would be anticipated.

The dose is decreased or increased as indicated throughout the treatment. We attempt to produce slow and gradual changes in the level of the blood pressure to allow the musculature of the arterioles to adjust itself to changing blood volume flow. We feel that the essential factor in our method of treatment is the reduction of diastolic pressure in the proper ratio to the reduction of systolic pressure. It is only by the reduction of diastolic pressure that it is possible to reduce the load of the heart laboring to maintain a pressure high enough to give an adequate volume circulation above a high and unyielding diastolic pressure. Every beat of the heart must raise its internal pressure above the level of the diastolic pressure before the aortic valves can open; then the pressure must continue to rise in the heart until the pressure is high enough to produce an adequate pulse pressure.

There is very little rest for the heart in such cases. In an effort to produce an adequate volume flow of blood, the heart rate increases, and the rest period decreases proportionately.

We attempt to treat our patients with as low a blood potassium sulfocyanate level as possible, and we often secure satisfactory results with relatively little increase in the blood level of potassium sulfocyanate. Only rarely is it necessary to raise the blood potassium sulfocyanate above 9 mg. per 100 cc. of blood. We have seen much higher levels, with no serious ill effects.

We are impressed by the rapid relief of symptoms, such as headaches, weakness, and dizziness, and the feeling of well being associated with the treatment. This improvement is often quite rapid and may be independent of blood pressure response. One patient who had frequent vascular crises with a sharp rise in pressure, and shock with angina pectoris has had complete relief and has worked regularly for more than two years. Now his blood pressure ranges about 160 systolic, 90 diastolic, whereas it was 220 systolic and 130 or 140 diastolic, with a rise in his crises to 280 systolic, 160 diastolic. He has had no vascular crises or angina since the treatment was commenced.

Results

We recognize that we do not have the cure for hypertension; yet we do have a method which in our hands produces very satisfactory reductions in pressure, both systolic and diastolic, stabilizes the pressure at a safe level, apparently frees the patients from the danger of vascular crises, apoplexy and cardiac failure, and with reasonable care minimizes the danger of the occurrences of attacks of angina pectoris, the angina of effort. We still admit ignorance of the nature of the active pressor substance in the blood[5].

Approximately 120 cases have been treated by us with potassium sulfocyanate. Several of them stopped treatment, and only those patients who have been followed for several months have been included in the figures in this report. There has been no other selection of the cases included in this report. Results have been classified as good if there has been a sustained reduction of 15 per cent or more in both the systolic and diastolic pressures. Very few showed so small an improvement. Many of the patients now show a normal pressure.

Causes of Poor Results

Of the 17 cases showing poor results, one was a toxemia of pregnancy; this patient could scarcely have been expected to show any improvement from this treatment. Three patients with syphilis of the central nervous system were treated; results in all were poor. Nine other old syphilitics were treated and six of them gave poor results; results in the other three cases were fair. Two patients had had hemiplegia. One patient who had a mild decompensation also gave poor results. All the other patients whose results were poor presented severe grades of arteriosclerosis. There is no reason to expect good results in such patients from any method of treatment. These cases illustrate all the contraindications to the use of this treatment which we have encountered.

Neither age, sex, race nor social status appears to influence the results. The fact

5. Caviness, Verne S.: Arterial Hypertension, Tr. M. Soc. State of North Carolina, 1926, p. 271.

RESULTS WITH POTASSIUM SULFOCYANATE

No. Cases	*Age Group*	*Race*		*Sex*		*Results*			*Diagnosis*			*Classification of Patients**
		W	*C*	*M*	*F*	*Good*	*Fair*	*Poor*	*Ess. Hyp.*	*Hyp. with Lues*	*Hyp. with Decomp*	
15	20 - 40	7	8	8	7	9	1	5	13	2	0	A— 1 C— 7 B— 6 D— 1
45	40 - 60	31	14	28	17	33	4	8	39	3	3	A— 8 C—14 B— 9 D—14
27	60 - 80	23	4	21	6	18	5	4	23	4	0	A—10 C— 5 B— 5 D— 7
Total: 87		61	26	57	30	60	10	17	75	9	3	

* A—N. C. State Hospital. B—N. C. State Prison. C—Rex Hospital Clinic. D—Private Patients.

Classification of Results:

Good: 68.9%. Above 15% reduction in systolic and diastolic pressure.
Fair: 11.5%. Above 10% reduction in systolic and diastolic pressure.
Poor: 19.6%. Below 10% reduction in systolic and diastolic pressure.

that only two private patients had poor results can be explained by the fact that the private patients were in better physical condition and did not show toxemias of pregnancy, hemiplegia, syphilis, or too severe grades of arteriosclerosis.

One patient, not included in the table, was in the hospital two weeks on the service. She gave a very satisfactory response to the drug, but rather suddenly her blood potassium sulfocyanate level rose to a concentration of 35 mg. per 100 cc. of blood. The drug was stopped, but the concentration increased for several days. There were no ill effects except a skin rash and severe pains in her legs and back. Her blood pressure dropped to normal and remained normal while she was in the hospital, but we have not seen her since her discharge from the hospital. Care is needed to prevent too high a concentration in the blood.

This method of treatment is simple, but far from being free from danger. Apparently there is a definite danger if the blood concentration becomes too high. However, the most effective blood concentration appears to be far below the danger zone, and is often near the usual normal level of patients not on treatment.

We have not encountered the severe anemias from this method of treatment that have been reported by some of the earlier observers. There may be two reasons for this:

First, we use smaller doses, with a more gradual lowering of the blood pressure, and work with a lower blood concentration of potassium sulfocyanate.

Second, the anemia usually associated with severe hypertension may not at times have been differentiated from an anemia that might have been due to drug therapy.

Our patients are much more comfortable under treatment and are able to work. Only very rarely do we stop them from work. When they stop treatment for any reason, we note a gradual rise in diastolic pressure, followed later by a rise in systolic pressure.

Conclusions

1. Potassium sulfocyanate is a safe vasodilator substance if used properly.
2. Potassium sulfocyanate lowers the systolic pressure, and also lowers the diastolic pressure in the proper ratio.
3. Potassium sulfocyanate can be made to lower blood pressure gradually without the usual headaches associated with reduction by other means.
4. Potassium sulfocyanate in conservative doses apparently does not produce anemia. Anemia is usually associated with any severe hypertension, whether untreated or treated by any means.
5. Potassium sulfocyanate is present in the blood stream in a much larger percentage than any other known antipressor substance; it appears to be the natural agency with which to offset the effects of pressor substances.
6. The drug exerts a cumulative action at times.
7. There appears to be no tendency towards the development of a tolerance to the use of the drug. Numbers of patients have taken it several years without any loss in its effectiveness.

THE FRONTAL LOBES

In Their Relationship to the Ego and the Future

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and
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From earliest times the frontal lobes have been considered as portions of the brain concerned with the personality. The ancient Greeks endowed their gods and heroes with broad expansive brows, denoting superhuman traits. A multitude of scientific studies on the functions of the brain since the time of Gall and Spurgheim have spoken of the frontal lobes as being concerned with the highest psychic functions. Social sense (Bianchi); instigator of progress (Tilney); constructive imagination (Franz); synthesis (Brickner); changing categorical attitudes (Goldstein); planned initiative (Penfield)—these and a number of other functions have been assigned to this part of the brain by authors who have undertaken the study of patients whose frontal lobes have been damaged in one way or another.

There are several inherent defects in the material of these authors, invalidating its use to our entire satisfaction. Tumors of the frontal lobe compress and infiltrate the

From the Department of Neurology, George Washington University. Presented before the North Carolina Neuropsychiatric Association, Durham, March 28, 1941.

brain, and they interfere with its function also by disturbing sight or speech; injuries are seldom sharply localized, and even when the injury consists in the extirpation of one or the other frontal lobe, there is always a surgical reason for that extirpation, and damage is certain to extend beyond the confines of the extirpated portion. Atrophies and inflammations are widespread, and thromboses and abscesses are seldom symmetrical. Finally, in the case of the frontal lobes, since both sides appear to work as a unit, one of them can be severely damaged without disturbing personality to any pronounced degree. The second major defect in the studies on the frontal lobes thus far reported is the lack of information concerning the personality before the onset of the disorder that required surgery. As a result of all this, even in the most exact studies, the problem solved has been the functioning of the personality deprived of a certain amount of frontal lobe tissue, rather than the function of the frontal lobes.

The operation of prefrontal lobotomy has brought with it some new concepts of the functions of the frontal lobes. During the past four and a half years we have had the opportunity of studying more than 80 patients before and after incisions into their frontal lobes. The operations were performed for the purpose of freeing them from severe anxieties, depressions, hypochondriases; from crying spells and from suicidal ideas; from worry, obsessive thinking, apprehension and agitation. When the operations succeeded these symptoms disappeared and were replaced by good humored acceptance of the facts of daily existence, and a renewal of interest in external events as opposed to internal. When we have gone too far, cut off too much of the frontal lobes, we have seen a state which is described as typical for frontal tumors—namely indolence, inertia, euphoria, tactlessness, irascibility and indecency.

One thing is certain: there is no significant intellectual deficit following prefrontal lobotomy. If performance falls below the standard expected of the individual it is because of certain emotional alterations that affect his attitude toward himself and his drive toward perfection.

Prefrontal Lobotomy

Prefrontal lobotomy consists in the surgical incision of the white matter of the frontal lobes. In our experience the best results are obtained by keeping the incision in the plane of the coronal suture. This incision passes close to the knee of the corpus callosum and the anterior horns of the lateral ventricles, and cuts across two important projection pathways in the frontal lobes, the fasciculus cinguli (not always injured) and the anterior thalamic radiation. The association pathways are also affected, particularly those crossing in the corpus callosum, but we believe that they are less important.

When the operation is performed under local anesthesia, as is the case in the majority of instances, the behavior of the patient can be observed as first one and then the other frontal pole is separated from the rest of the brain. The most striking feature is the immediate reduction in anxiety. While the preliminary steps of the operation are being carried out the patient is not infrequently in a panicky state and totally unable to carry on a conversation. In a recent case the pulse and blood pressure rose to 160 and 162 systolic, 110 diastolic respectively while the burr holes were being placed. The patient kept repeating over and over: "I want to live; I want to live." The hands were cold and white, almost dripping moisture, and she was totally inaccessible. With the performance of the final incision in the frontal lobes all the tension disappeared, the blood pressure returned rapidly to its previous level of 110 systolic, 74 diastolic, the pulse fell to 90, and she was able to respond to questions.

Not infrequently disorientation and somnolence set in for a few days after operation, and sometimes vomiting and incontinence. Unless these appear, we believe that the operation has been insufficiently extensive and are inclined to reoperate. Patients are usually able to be up and about after five days, and are discharged in ten days. During the postoperative period the patient shows a very pronounced alteration in his attitude. He is calm and placid, and although he may insist that the fears and pains are still present, he admits that they don't worry him. He may go through the motions of a compulsive act, but more from habit than from necessity. He discusses his hallucinations or delusions as if they were unimportant, just his imaginings. What apparently takes place immediately after operation is bleaching of the affective response,

followed by disappearance of the morbid ideas, and finally subsidence of the compulsions.

Personality Changes

The outstanding alteration in personality appearing as the result of prefrontal lobotomy is the redirection of its interests. Introversion changes to extraversion. Emotional responses are lively but are apt to be shallow. Although these patients laugh more easily or flare up in anger, there is none of the brooding intensity previously observed. There is a notable lack of consciousness of the self, both as a member of society, and as a collection of organs. There is a certain indolence, or procrastination, or laziness that is in marked contrast to the passionate industry that preceded the onset of the neurosis or psychosis. Above all there is a certain lack of foresight, not so much with regard to external things having to do with the occupation of the patient, as with regard to the realization of how the patient will appear in the event of a certain action taken by him. There is the basis of the tactlessness, the silly jesting, *Witzelsucht* and general light hearted childishness seen in some cases.

It must not be supposed that patients undergoing prefrontal lobotomy are reduced in their capacity to think constructively. Quite a number of them have returned to their previous occupations at a satisfactory level of efficiency, whereas few of them require institutional care. Patients need a period of adjustment following operation before they are able to return to work. This may vary from a few weeks to many months depending both upon the type of work and the type of patient. Naturally indolent individuals who have driven themselves to capacity in search of the ideal will be content with something less than that and will have to be pushed. Naturally vigorous people, on the other hand, may show a lack of the sense of fatigue and may continue working beyond their previous capacity. Naturally retiring people are inclined to accept what is handed them, while naturally aggressive people sometimes seem to lose the power of restraint and become disagreeable problems for their families. The operation works best in those individuals of natural industry and capability whose ideas have become directed inward with feelings of guilt, uncertainty, insecurity, incapacity, fear and anxiety.

The Frontal Lobes

From a study of patients undergoing prefrontal lobotomy we have come to the belief that the frontal lobes are concerned with foresight and with consciousness of the self, and that the affective toning of these ideas is mediated through the anterior thalamic peduncle or fronto-thalamic radiation which is cut by the operation. The absence of any significant intellectual defect inclines us to place the mechanism underlying memory and intelligence in the large association areas of the parietal, temporal and occipital lobes. In other words, what lies behind us in this existence, lies behind the rolandic fissure in our brain, whereas what lies ahead is worked out in the great frontal association areas. By means of these we are able to foresee the results of various lines of action and to appreciate in advance, to seek the fruitful and avoid the harmful, to follow the devious course that will bring the best results attainable, and to compare the actual accomplishment with that which we have foreseen. Furthermore, by means of the frontal lobes we are able to act and to observe at the same time, to be both the actor and the audience. We are aware of our bodily mechanisms in the sense of anticipating what may happen if a certain sensation continues, and what it may mean in terms of disease and disability. It can readily be imagined how much affective tone is supplied to these particular ideational processes, and what may happen when the sphere of interest becomes more and more restricted to the individual himself.

Psychosurgery

When the sphere of interest is narrowed to the self to the extent of obliviousness to the external world; when the emotional charge is such that depression is invincible and suicide seems the only way out; when the illness is but an exaggeration of the patient's normal personality, characterized by attempts to see too far into the future and to envisage all the contingencies; and when the outlook for recovery under milder measures is unpromising—then the surgical operation of prefrontal lobotomy, by reducing the emotional component connected with the ideational processes, may suffice to reorient the individual in his relation to himself and to his environment. This is the aim of psychosurgery.

PANCREATIC LITHIASIS

With Report of a Case

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It is the purpose of this paper to add another case of pancreatic calculi to the number already reported, and to emphasize certain unusual aspects of the case. Pancreatic calculi are rare, and most of them are discovered at the autopsy table. Woodyatt[1] says that as early as 1788 Cawley reported stone and atrophy of the pancreas in a case of diabetes, and that the repeated finding of morphological changes was one of the clues that led to the ultimate establishment of the relation of the pancreas to diabetes. In fact, it would seem from the study of the literature on this subject that, despite the rareness of this condition, the study of it has contributed materially to the progress that has been made in the knowledge of diabetes and in its treatment.

Case Report

E. B. D., a white male, aged 38, was admitted to Watts Hospital for the first time on March 7, 1933. The history of his illness stated that nine years prior to this, he developed typical symptoms of diabetes: excessive thirst, polyuria, and excessive appetite. The physical examination at that time was not remarkable except for a blood pressure of 180 systolic, 100 diastolic, some pyorrhea, and diseased tonsils. The Wassermann and Kahn tests were negative. Fasting blood sugar at that time was 285.7 mg. per 100 cc. of blood, and the urine showed sugar and a light cloud of albumin. He was put on insulin, and was discharged with only a trace of sugar in the urine.

He was in and out of the hospital from then until the time of his death. In the records of these admissions, the most striking thing is the variation in the blood sugar. It ranged from 45 to 444.4 mg. per 100 cc. of blood. He was admitted several times in insulin shock.

On his fourth admission the roentgenologist, in a report of the gastro-intestinal series, stated that there was a suggestion of a lesion at the circle of the duodenum—probably a cyst. Cardiac and renal symptoms were manifest throughout all admissions.

His seventh and final admission to the hospital was on August 11, 1937. He came in with a chief complaint of nausea and vomiting for the past week. His only other symptom was that of weakness. Physical examination revealed the following findings: The blood pressure was 200 systolic, 120 diastolic. Breathing was labored. The pupils reacted sluggishly to light; the nose showed slight obstruction. There was marked pulsation of the vessels in the neck. *Mouth:* Many teeth had been removed, and those remaining were questionable; the tonsils were diseased. *Chest:* The persussion note was normal throughout; the diaphragms moved normally; the lungs were clear, and no rales or frictions were heard. The heart rate was regular, 68; the second sound at the aortic area was accentuated; sounds were distant at the apex; no distinct murmurs were heard; cardiac dullness was increased to the left. The *abdomen* was full, with some tenderness over the lower right abdomen; there was a McBurney appendectomy scar; no hernias were noted; there were palpable glands in both groins.

Patellar reflexes were normal. No edema was noted at this time. Eye grounds showed extensive retinitis, a few small hemorrhages, and a rather large hemorrhage just above the left disc; rather advanced optic atrophy was noted.

On August 18 the patient complained of mild headache, and it was noted that he was drowsy. The patient's condition gradually grew worse, and on August 28, a pericardial friction rub was noted. On August 29 he had a convulsion and died.

His blood urea nitrogen on August 17 was 45 mg., blood urea, 96.3 mg. On August 28 the blood urea nitrogen was 46.8 mg., the blood urea, 100.0 mg. The urine showed many pus cells on this admission, and the blood sugar ranged from 51.2 to 444.4 mg.

The following is a report of the pathological findings:

Gross Findings: This is the body of a thin, poorly nourished, white male, about 40 years of age, showing much pitting edema of the lower extremities.

Chest: There is no pleural fluid. There is

Photomicrographs shown in this report were made at the Army Medical Museum, Washington, D. C.

1. Woodyatt, R. T., in Cecil: Textbook of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1938, p. 623.

only a scattered old pleural adhesion present. The lungs are generally crepitant, and a little redder than usual. No solid areas are present.

Heart: The pericardial sac contains about 50 cc. of slightly cloudy, straw-colored fluid. The pericardial surfaces are coated by a thin layer of pale, yellow, fragile, shaggy material. The heart is of normal size. The valves and endocardium are grossly normal.

The abdominal aorta and its large branches show numerous atheromata on their intimal surfaces.

Abdomen: All organs are in their normal positions. The peritoneum is smooth and glistening.

The liver is normal in shape, but is moderately enlarged, with a smooth surface. The cut surface is studded with small, pale, yellowish areas.

The gallbladder is grossly normal. It contains about 30 cc. of thin bile, which can be expressed into the duodenum with moderate pressure.

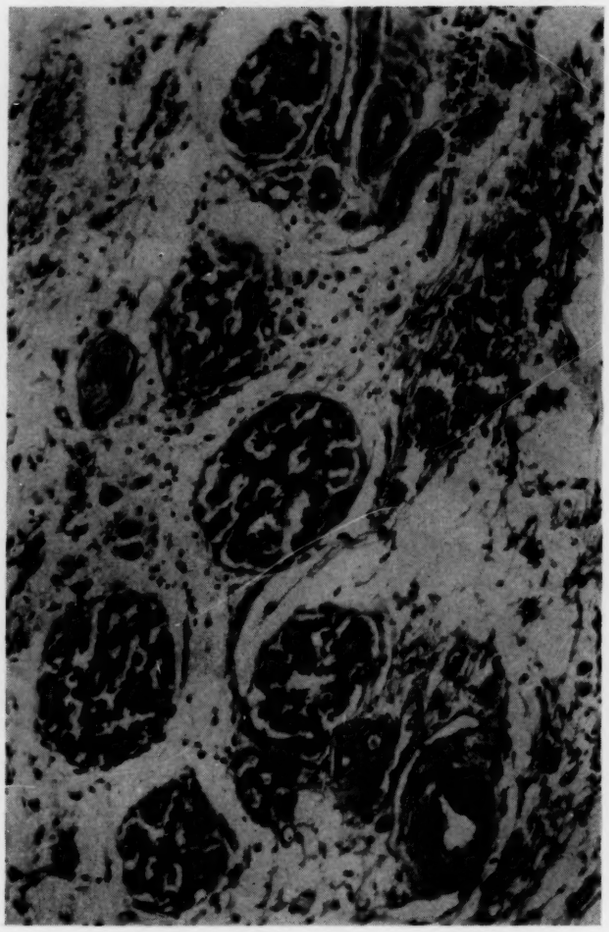
Pancreas: It is almost impossible to identify this organ, except that the pancreatic duct is filled with a hard greyish-white concretion. This concretion extends toward the body and tail of the pancreas, with branches extending into the smaller pancreatic ducts. The stone is of a "stag-horn" type with most of the branching being present in the head of the pancreas. Surrounding the ducts, there is none of the usual pancreatic tissue. Instead, it consists of fatty tissue, streaked with small bands of tough, white tissue.

The spleen is of normal size and shape. Its substance is friable and of a deep, reddish-purple color.

Kidneys: These are quite small, being not over two-thirds of their normal size. The capsule strips with some difficulty, leaving a coarsely and finely granular surface. The cortex is thin and not sharply demarcated from the medulla. The pelves and ureters are normal.

Gastro-Intestinal Tract: This system shows no striking features, other than a little swelling and some redness of the mucosa in the small intestines. There are no ulcerations.

Microscopic Examination. Pancreas: Sections from various parts show complete absence of the acinous tissue. The islets are present and are surrounded by fatty and fibrous tissue, containing round cells and monocytes. They show no striking features when stained with hematoxylin and eosin, and some are fairly large. The arteries and arterioles have small lumina with greatly thickened walls. In the arterioles, the walls have very scanty cells.



Section of the pancreas showing well-preserved islands of Langerhans in stroma of fibrous and fatty tissue, infiltrated with a few round cells and monocytes. There is complete absence of acinous tissue. Magnified 240 times.

Kidneys: There is much fibrous tissue present throughout the cortex, which is heavily infiltrated with round cells and a few neutrophilic polymorphonuclear leukocytes. The enclosed renal elements are atrophied. The glomeruli show marked changes, which vary from fibrosis of their capsules to complete hyalinization of their tufts. Some of the better preserved glomeruli and tubules are considerably enlarged, and some of the tubules contain collections of polymorphonuclear leukocytes. The arteries and arterioles show considerable sclerosis.

Liver: The central parts of practically all of the liver lobules show large necrotic areas with only narrow zones of living hepatic cells about their peripheries.

Section of liver showing extensive central necrosis of the lobules and a very narrow peripheral zone of living hepatic cells. Magnified 90 times.

The gallbladder shows no striking features, other than some autolysis of the mucosa.

Heart: The pericardium is covered by a layer of fibrin in which are very few leukocytes. The tissue just beneath this contains a few round cells. The muscle fibers show a little granularity of their cytoplasm.

Spleen: Arteries and arterioles show moderate sclerosis.

Lungs: These show evidences of mild passive congestion, and some anthracosis.

Stones: On chemical analysis, the stones were found to be composed of calcium carbonate.

Pathological Interpretation: Chronic nephritis, arteriosclerotic. Pancreatic calculi with atrophy of pancreas. Fibrinous pericarditis (uremic). Central necrosis of liver.

Discussion

There has been no effort to make an exhaustive review of the literature.

Cases of pancreatic calculi are rare. Seeger[2] in 1928 collected 103 cases of pancreatic calculi and added one of his own. J. G. Mayo[3] in 1936 stated that approximately 125 cases of pancreatic lithiasis had been reported in the literature. Brook[4], reporting in the *Lancet* of October 1939, states that less than 140 cases have been reported since the condition was first described by de Graaf two hundred and seventy years ago. He stated that the diagnosis was notoriously difficult. Mayo reviewed the cases that had been found in the Mayo Clinic and found that they totaled 25.

Brook gives the following reasons for the difficulty in diagnosis: (1) There are no pathognomonic symptoms or signs of pancreatic stones, except their discovery in the stools. (2) The symptoms of pancreatitis, though this disease is apparently common, are so vague that it is seldom diagnosed. The only characteristic features are evidences of pancreatic insufficiency in fluid withdrawn from the duodenum, and the finding of undigested fat and muscle fiber in the stools. The stools are often bulky, grumous, and foul-smelling. Pain, the most common symptom of pancreatitis, with or without calculus, is likely to be confused with that of gastric or duodenal ulcer, gallstones, or renal calculi. Its situation may be epigastric, umbilical, right or left hypochondriac, or lumbar, radiating in different directions. Diabetes is frequently associated with this condition, due to the destruction of parenchyma and islands of Langerhans through repeated attacks of pancreatitis. When diabetes is caused by a lesion of the pancreas, the lesion always involves the islets; conversely, whenever the organ is diseased and diabetes is absent, the islets are relatively free from involvement. Changes in the stool, when found, are important, and are of aid in the diagnosis. Jaundice, loss of weight, nausea and vomiting are common symptoms.

According to Brook, Mayo Robeson in 1904 recognized the value of radiography in the diagnosis of pancreatic stones, because of their high calcium content. Mayo, on the other hand, gives credit to Seeger as being the first one to call attention to the importance of roentgenological examination in the diagnosis of pancreatic lithiasis. Seeger in 1928 could quote only one case in which (up

2. Seeger, S. J., in Radiology, 10:127, 1928.
3. Mayo, J. G., in Proc. Staff Meet. Mayo Clin. 11:456 (July 15) 1936.
4. Brook, W. F., in Lancet, 2:873-876 (October 21) 1939.

to 1926) the pre-operative diagnosis had been made by this means. Brook explained that variations in calcium content, blurring of outline caused by aortic pulsation, and differentiation of shadows of the stones from those cast by other objects cause difficulty in the diagnosis. He thinks a flat plate should always be made before giving the barium meal, because the barium meal often obscures the stone.

The etiology of pancreatic stone is still obscure. It is generally agreed that inflammation, whether by way of ducts, lymphatics or blood stream, and stasis of secretion are essential causal factors. Normal pancreatic juices contain no calcium carbonate, which is the chief constituent of the calculi, but in the presence of inflammation some change presumably takes place in the process of secretion, resulting in its formation. Its frequent association with disease of the biliary tract points to a common cause. Mayo feels that the etiologic agent is most often to be found in the biliary tract. Both Brook and Mayo divide the stones into two groups: true stones, found in ducts, and "false stones" or calcification of the parenchyma resulting from pancreatitis. The duct stones, by causing obstruction, lead to interstitial pancreatitis by back pressure, and to further stone formation. Brook reported a case of a man of 76 years in which he thought a hypercalcemia might have played a part.

Comment

This case shows several unusual aspects. While we do not know whether the pancreatic calculi antedated the diabetes, it is known that the patient had diabetes thirteen years prior to his death; and that at first he seemed to have a fairly usual type of diabetes. It was noticed as his course was followed that he developed an increasing sensitivity to insulin. We were not able to discover, in looking over the chart, that he ever had a spontaneous hyperinsulinism. As far as we could tell, the shock always followed the giving of some insulin, but the notation occurs time and again that it was hard to regulate his insulin; in fact, it does not seem that it was ever properly regulated. Of course, the cardiac and renal aspects of this case were important, and as far as could be told clinically, death resulted from uremia. It is difficult to see how either of these two conditions could have played any definite part in his peculiar carbohydrate metabolism. According to the pathologist's report, the liver showed large areas of necrosis, and, while one cannot be sure, it seems safe to assume that up to a short time before death its glycogenic function was intact.

There is one other thing which should be considered in these cases of pancreatic lithiasis where the destruction of the pancreas seems to be complete—that is, the question of a lipocaic deficiency. Certainly from the pathological examination of the liver there did not seem to be any excess fat present in this particular case. It is a recognized fact that certain depancreatized dogs do not develop evidence of this deficiency[5], and yet, with an increasing insulin sensitivity, one would have to think of this condition. Wiggers[6] says that "it does not as yet appear to have been established beyond a reasonable doubt, that the effect exhibited by extracts of the pancreas may not be attributed to their content of choline and protein. Some have claimed that fatty changes in the liver do not occur when the pancreatic duct is ligated and the formation of a pancreatic hormone ought to continue. Ralli and her associates, however, found the same increase in liver fat (estimated chemically) after ligation of the pancreatic duct as in depancreatized dogs."

If the hormone, lipocaic, really exists, then this case would suggest that it, too, is secreted by the cells of the islets of Langerhans; because as far as the pathologist could tell, the rest of the pancreas was destroyed. In a personal communication to one of the authors (W. R. S.), Dragstedt[7] says that this is in keeping with his investigation on the subject, and he believes that lipocaic comes from the islet cells and probably from the alpha cells.

This patient's pancreatic calculi were not diagnosed *ante mortem*, and yet a review of his x-ray examinations disclosed that one plate showed the stones. A print of this plate is shown. Pain, which is a frequent symptom of this condition, was not prominent in this patient's history, and was recorded only shortly before his death. There was nothing remarkable noted about his stools at any time; in fact, they were reported as normal. The x-ray report men-

5. Dragstedt, L. R., et al.: Lipocaic and Fatty Infiltration of the Liver in Pancreatic Diabetes, Arch. Int. Med. 64: 1017-1038 (November) 1939.
6. Wiggers, C. J.: Physiology in Health and Disease, ed. 3, Philadelphia, Lea & Febiger, 1939, p. 905.
7. Dragstedt, L. R.: Personal communication to W. R. Stanford, May, 1940.

Print of x-ray film showing pancreatic stone, as indicated by arrow.

tioned in the history certainly should have drawn very definite attention to the pancreas, but it seems to have been lost in the maze of admissions and re-admissions.

Conclusion

While both Mayo and Brook emphasized the fact that the etiological factor of pancreatic calculi is often found in the biliary tract, it would hardly seem that there was enough evidence of chronic disease in this particular case to lead to this assumption. While one cannot be sure whether the pancreatic stones antedated the diabetes or not, it seemed that this patient started off very much like the usual type of diabetic. That there was increasing sensitivity to insulin in this patient appears to be a fairly well established fact. It is a known fact that the pancreas does regenerate itself, but there is nothing in the histological protocol to show that this pancreas did. The fact remains that this patient, while he was subject to hyperinsulinism, was a very severe diabetic up to the time of his death.

It has been our experience in several cases that the diabetic patient who is difficult to regulate often proves to have some complicating factor.

CHRONIC ATROPHIC PYELONEPHRITIS (GOLDBLATT'S HYPERTENSION)

Case Report

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CHARLOTTE
B. D. MOORE, M. D.
MT. HOLLY
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CHARLOTTE

Only very recently have we recognized cases of hypertension which might be classified as the clinical counterparts of Goldblatt's experimental hypertension following renal ischemia. While these cases are rare, the results which follow a correct diagnosis and treatment are so dramatic and gratifying that an isolated case seems worthy of a report. We shall not attempt a review of the ingenious experiments by Goldblatt and others which led to the recognition of this entity, as the reader may readily consult the key references below[1].

Case Report

M. L., a 15 year old girl, consulted her physician (B. D. M.) in September, 1939. This visit was prompted because her blood pressure had been found to be high following a reaction to an injection of novocaine for the extraction of a tooth. The initial reading revealed a systolic blood pressure of 172 mm. of mercury, and a diastolic pressure

1. (a) Goldblatt, Harry: Studies on Experimental Hypertension: V. The Pathogenesis of Experimental Hypertension Due to Renal Ischemia, Ann. Int. Med. 11: 69-103 (July) 1937.
(b) Freeman, N. E., and Page, I. H.: Hypertension Produced by Constriction of the Renal Artery in Sympathectomized Dogs, Am. Heart J. 14:405-414 (October) 1937.
(c) Houssay, B. A., and Fasciolo, J. C.: Experimental Hypertension, J. A. M. A. 109:2002 (December 11) 1937.
(d) Longcope, W. T.: Chronic Bilateral Pyelonephritis: Its Origin and Its Association with Hypertension, Ann. Int. Med. 11:149-163 (July) 1937.
(e) Butler, A. M.: Chronic Pyelonephritis and Arterial Hypertension, J. Clin. Investigation 16:889-897 (November) 1937.
(f) Weiss, Soma, and Parker, Frederic, Jr.: Vascular Changes in Pyelonephritis and Their Relation to Arterial Hypertension, Tr. A. Am. Physicians 53:60-73, 1938.
(g) Barney, J. D., and Suby, H. L.: Unilateral Renal Disease with Arterial Hypertension; Report of Case Apparently Cured Following Nephrectomy, New England J. Med. 220:744-746 (May 4) 1939.
(h) Crabtree, E. G.: Hypertension in Destructive Infected Unilateral Lesions of the Kidney, Tr. Am. A. Genito-Urin. Surgeons 31:299-319, 1938.
(i) Leadbetter, W. F., and Burkland, C. E.: Hypertension in Unilateral Renal Disease, J. Urol. 39:611-626 (May) 1938.
(j) Boyd, C. H., and Lewis, L. G.: Nephrectomy for Arterial Hypertension, J. Urol. 39:627-635 (May) 1938.
(k) Barker, N. W., and Walters, Waltman: Hypertension Associated with Unilateral Chronic Atrophic Pyelonephritis: Treatment by Nephrectomy, Proc. Staff Meet., Mayo Clin. 13:118-121 (February 23) 1938.

of 120. An adolescent goiter, tachycardia, nervousness, slight loss of weight, and a slightly increased basal metabolic rate (plus 14 per cent) were discovered during this examination and subsequent visits. Because of these findings, Lugol's solution and rest were given an adequate trial, but did not alter the range of her hypertension. During this time the systolic blood pressure ranged between 162 and 200.

When the patient was seen on January 5, 1940, there were no pressing complaints and no symptoms referable to the hypertension other than an occasional nocturnal headache.

Her past medical history yielded no significant information. There had been no serious medical illnesses, and there was no history of scarlet fever, septicemia, nephritis, pyelitis or other diseases which might have been contributing factors. A tonsillectomy had been performed several years preceding this illness. There was no history of hypertension in the family, except for her maternal grandfather.

Physical examination revealed the patient to be a well developed and alert young girl of 15 years. The temperature was normal, and the pulse rate averaged 100. The head and eyes were externally normal, except for a questionable narrowing of the retinal arterioles. The ears, nose and mouth were negative. There was a slight enlargement of the thyroid gland. There was no appreciable hypertrophy of the heart. The sounds were forceful and tambour in character. The rhythm was normal, and there were no murmurs. The abdominal examination was negative except for a forceful pulsation of the abdominal aorta, which could be readily palpated. All peripheral arterial pulsations were present and equal on both sides, thereby excluding coarctation of the aorta. A neurological examination was objectively negative.

Repeated blood pressure readings were taken over a period of several days and were always found to be uniformly high. The following readings were representative:

	Lying position	*Upright position*
Right arm:	182/140	188/130
Left arm:	232/136	200/146
Right leg:	220/150	
Left leg:	220/150	

Repeated urinalyses revealed either a 1 plus or 2 plus reaction for albumin, with a specific gravity varying between 1.020 and 1.024. There were also about 25 pus cells per low power field in a catheterized specimen. A complete blood count was within normal limits. The Wassermann test on the blood was negative. The determination of the urea nitrogen in the blood was 18 mg. per 100 cc. The phenolsulfonephthalein test for renal function showed a two-hour total excretion of 65 per cent.

The electrocardiogram showed only a slight left axis deviation and an inversion of the T wave in Lead III. The roentgenogram of the chest was essentially negative, with normal cardiac measurements. A basal metabolic rate determination at this time was plus 4 per cent.

Excretory urography was done, and showed a very small right kidney with a typical urographic appearance of atrophic pyelonephritis, and some apparent compensatory hypertrophy of the left kidney. Cystoscopic examination revealed that the urine from the right kidney yielded pus cells and gram-negative rods. The urine from the left kidney was entirely clear.

The patient consulted a well known clinic where the diagnosis was confirmed and a nephrectomy on the right side advised. This was performed on January 19, 1941, and the following is an excerpt from the operative note:

"The right kidney was exposed and found to be about one-third normal size and contracted, measuring about 5x3½ cm. There was some dilatation of the pelvis and ureter, and an anomalous vessel about 2 mm. in diameter crossed the ureteropelvic juncture, and this probably accounted for the stasis of the kidney. The kidney was removed. The branches of the arciform artery of the kidney stood out quite prominently and the cut ends looked as though there was considerable thickness of the blood vessel wall and diminution in the size of the lumen."

The postoperative convalescence of the patient was uneventful and the reduction in blood pressure was dramatic. Two weeks after operation the blood pressure was 130 systolic, and 90 diastolic, with an elevation to 160 systolic and 105 diastolic in response to the cold pressor test. Six months after the nephrectomy the blood pressure averaged 140 systolic and 90 diastolic; ten months after the operation, the systolic pressure varied between 128 and 144 and the diastolic between 80 and 98; and fifteen months after the operation the systolic blood pres-

sure varied between 140 and 156 and the diastolic between 96 and 106. The higher readings were always obtained during the early part of the examination when the patient was somewhat excited. The cold pressor test for determining the "ceiling" in hypertension has given a normal response on all occasions. The patient has continued to enjoy excellent health and has resumed her normal activities. There are no residual symptoms at the present time.

Conclusions

We have delayed reporting this case until more than a year had elapsed in order to evaluate the remarkable and dramatic results obtained after removal of a kidney which prior to the marked hypertension had caused no symptoms which might have suggested that a chronic atrophic pyelonephritis was present. However, the relationship between such cases of hypertension and the unilateral chronically infected atrophic kidney has been known only for a very few years, and sufficient time has not elapsed since the recognition of this clinical entity to predict the ultimate prognosis. Thus far the results have been most gratifying.

This case also serves to remind us that when we encounter a marked increase in blood pressure in young individuals, we must consider such rare and unusual causes of hypertension as coarctation of the aorta, Wilms' tumor of the kidney, polycystic kidneys, and the paraganglioma tumor of the adrenals in addition to the more usual causes of hypertension.

Gout. — Gout is a chronic degenerative disease with a high familial incidence. It is infrequent but not rare in occurrence and may be unrecognized in the earlier years after its onset. It is predominantly a disease of the male sex and should be suspected in any patient with unexplained pain in the joints of the extremities. The acute attacks occur periodically and in the earlier years after onset of symptoms there is no residual distress following attacks. The diagnosis may be suspected in any patient who presents (a) inflammation about one or more joints, (b) concentration of serum acid about 6 mg. per 100 c.c., and (c) whose pain is alleviated by colchicine. Late in the course of the disease there may be (d) subcutaneous tophi from which urate needles may be recovered and (e) characteristic changes by x-ray. Treatment during the acute attacks embodies the judicious use of colchicine. In symptom-free periods, a diet adequate in minerals, vitamins, and proteins is advised. A liberal fluid intake is important as well as the ingestion, perhaps, of colchicine.—John H. Talbott: Clinical Gout, Rocky Mountain M. J. 38:196 (March) 1941.

INTRAVENOUS ERGOTRATE AT THE END OF THE SECOND STAGE OF LABOR

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It has long been evident that hemorrhage is one of the most serious problems in obstetrics, and that it materially influences morbidity and mortality. In seeking to lessen blood loss connected with child bearing one must consider the third stage of labor, for it is during this stage that excessive blood loss frequently occurs. Any improvement in the conduct of the third stage of labor should decrease the blood loss of the mother and should be reflected in improved morbidity statistics.

In an effort to accomplish this end, and prompted by the observation by one of us of the conduct of the third stage of labor at the Chicago Lying-In Hospital, we have recently changed our own technique. It is the purpose of this paper to present briefly the results obtained in a small series of 72 private obstetrical patients delivered between October, 1940, and February, 1941, who were given one ampule (1/320 grains) of ergotrate intravenously just at the onset of the third stage of labor. We believe that this technique has resulted in lessened blood loss, shorter duration of the third stage, and a lower maternal morbidity.

Usually a blood loss of over 500 cc. is considered a postpartum hemorrhage. According to M. E. Davis[1], the ideal conduct of the third stage of labor consists in recognizing placental separation and delivering the placenta promptly when this has occurred. Pituitrin intramuscularly probably does not affect the uterus for several minutes, and hence in many cases would not influence placental separation even when given immediately after the birth of the baby. Ergotrate seems to be safe even when given intravenously, acts promptly, has a prolonged action as compared to pituitrin, and apparently does not cause "allergic phenomena" such as "pituitary shock".

"If the phase of placental separation is

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1. Davis, M. E., in Am. J. Surg. 48:154-168 (April) 1940.

entirely a physical phenomenon and is the result of a sudden reduction of surface area of the placental site, then theoretically the more rapidly this reduction takes place, the more complete is placental separation."[1] To accomplish this reduction we have been giving 1/320 grains of ergotrate intravenously as soon as the head is delivered, and have found that the uterus contracts promptly and that the placenta is usually expelled in one to three minutes, often with practically no blood loss. This tonicity is maintained for some time and is probably responsible for lessened bleeding after the patient returns to her room, and for a lowering of "uterine" morbidity.

We have had no cases of incarceration of the placenta in the contracted uterus, but the possibility of such an accident exists, and hence this type of procedure should be one for hospital practice. A nurse or assistant is needed to administer the drug intravenously at the right time, and this factor is also against its routine use in home obstetrics. The most frequent causes of postpartum hemorrhages are incomplete placental separation—which is often due to uterine atonia—, and failure to express the separated placenta promptly. Intravenous ergotrate, we believe, lessens the possibility of these two occurrences.

Pastore[2] in his study of blood loss in the third stage of labor reports the following figures. In 574 consecutive cases no intravenous ergonovine was used. The average blood loss was 244.3 cc. and the duration of the third stage was as follows:

Under three minutes—26 cases.
Three to thirty minutes—440 cases.
Over thirty minutes—34 cases.

J. Davin and T. N. Morris[3] reported a series of cases in which 1 cc. of basergin was given intravenously at the onset of the third stage. Their average blood loss was 133.1 cc., and the average duration of the third stage was 2.3 minutes. Tritsch and Behm[4] of New York used the same drug and found the duration to average 2.95 minutes, and stated that the blood loss was definitely lessened. Their maternal morbidity was only 4 per cent.

The results in our series of 72 patients are as follows:

Parity:
46 primigravida
26 multipara

Type of delivery:
33 spontaneous
32 forceps
7 cesarean sections
1 pre-eclampsia and chronic cardiovascular-renal disease.

Indications for cesarean section:
2 placenta praevia
2 previous section for disproportion
2 disproportion and trial labor

Analgesia:
53 nembutal and scopolamine
19 other analgesia

Anesthesia:
44 nitrous oxide
9 cyclopropane
9 ether
7 local
3 local and nitrous oxide

Maternal deaths—0
Stillborn infants—0
Infant deaths—3 (prematurity)

Duration of third stage (65 vaginal deliveries):
1-3 minutes — 46
4-5 minutes — 13
6-10 minutes — 1
Over 10 minutes — 5
Average—4.5 minutes.

Blood loss (65 vaginal deliveries):
0- 50 cc. — 46
51-100 cc. — 8
101-200 cc. — 6
201-300 cc. — 5
201-300 cc. — 5
Over 300 cc. — 0
Average 77 cc. (estimated)

Morbidity (65 vaginal deliveries):
3 cases (1 pyelitis, 2 endometritis)—4.5 per cent.

The average duration of the third stage in this series is somewhat prolonged by occasional failure to express the placenta immediately after separation. We feel that in general the placenta should be expressed before the episiotomy or lacerations are repaired. We would anticipate a greater blood loss and longer third stage in this series of private hospital patients because of the high operative incidence, the fairly heavy seda-

2. Pastore, J. B., in Am. J. Ob. and Gyn. 31:78 (January) 1936.
3. Davin, J. and Morris, T. M., in M. Ann. District Columbia 9:1 (January) 1940.
4. Tritsch, J. E. and Behm, K. H., in Am. J. Ob. and Gyn. 34:676 (October) 1937.

tion, and the usual use of general anesthesia. Our average blood loss is an estimated figure which may be too low; however if we allow 100 per cent for error, the loss would be only 150 cc.

Conclusions

1. The series of cases presented is in itself too small to furnish any conclusions.
2. Together with the work and presentations of others this report supports the following beliefs:
   (a) That intravenous ergotrate is relatively safe to administer at the end of the second stage of labor.
   (b) That its use shortens the duration of the third stage.
   (c) That the blood loss in the third stage is lessened.
   (d) That the resulting improvement in the conduct of the third stage of labor may tend to lessen maternal morbidity.

SWIMMING POOL SANITATION

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During recent years bathing pools have become accessible to a large part of the population, and have to a large extent replaced the "old swimmin' hole" of a generation ago. The bathing pool has developed as an institution for the purpose of improving public health by providing physical education and recreation for both children and adults; yet it may be, and many times is, a decided menace to public health.

Usually the departments of public health have the responsibility of sanitary supervision and protection of the public from infections due to contaminated bathing pools. Their efforts will, to a large extent, determine whether the bathing place is beneficial or detrimental to public health.

The bathing pool in reality is nothing more or less than a community bathtub where the possibilities for the transfer of infections among bathers are many. The intimate contact of the bathers with a common medium in which an infective organism may remain viable long enough and in large enough concentrations to infect bathers, and the effect of too strong a concentration of disinfecting agent on the bathers, make difficult the maintenance of proper barriers to the transfer of infection.

The effect of relatively close contact between large numbers of people on the transfer of infection has long been recognized in the field of public health. One isolated person can infect only himself; two people can infect each other by two possible avenues; three by six avenues; four by twelve avenues, and so on. It is recognized that the number of bacteria in a pool increases with the number of bathers, and that the hazards also increase.

Bathing Pools and the Spread of Disease

There is a scarcity of epidemiological information concerning the transmission of disease in bathing pools. More epidemiological studies of swimming pools would add much to the clarification of swimming pool control. In the literature, we find typhoid fever, infections of the genital system, conjunctivitis, trachoma, jaundice, and Weil's disease recorded and described as having been contracted in bathing pools. The infections considered most common to bathing pools are those of the upper respiratory tract (nasopharynx and sinus infections, septic sore throat, and colds), middle ear infections, and skin diseases — particularly so-called "athlete's foot".

The diseases transmitted by bathing waters might be divided into two classes: (1) those diseases that are spread between bathers in small pools where the water comes from a clean unpolluted source, and (2) those diseases which might be contracted from bathing places where the water is polluted with sewage.

It is logical that the infections of the respiratory tract and the ear would be most prevalent, since the water in the pool at the time of swimming is contaminated with washings of the mucous membrane of the nasal chambers and mouth of every swimmer. In the majority of cases the water gets well into the nasal passages and ears of the swimmer, carrying with it the contamination of the pool, and bacteria that are present in the bather's nose and mouth. Since bathers are often very close to each other in the water, it is possible for this type of infection to be transferred before ample time has elapsed for the disinfecting process to diminish appreciably the number

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of bacteria. This bacteriological condition in bathing pools is not indicated by the ordinary bacteriological tests made on bathing pool waters.

The section on Laryngology, Otology and Rhinology of the American Medical Association has reported valuable information concerning the respiratory tract and middle ear infections among bathers.

Dr. Hasty[1] points out that the water produces temporary shrinkage and bleaching of the mucuous membranes adjacent to the openings of the sinus, making possible the direct entrance of contaminated water into the sinuses, where there is probably little local resistance to the bacteria. The shrinkage of the membrane also causes congestion of circulation and obstructs drainage from the sinuses, creating a situation favorable for the development of bacteria.

Dr. Marshall Taylor[2] has emphasized that man is naturally not a swimming animal and structurally is not equipped with the natural protections provided swimming animals. Aquatic animals possess muscles which voluntarily close the nostrils when under water, and flaps or valves which close and protect the ears. Dr. Taylor concludes that bacteria which can cause infections may be present in the bather's nose, and that the water breaks down the barriers which had prevented prior infection.

Bathers too often consider a sinus infection, a middle ear infection, or skin infections as being merely a coincidence. Whether or not a certain infection is due to contamination of the bathing pool is difficult to prove, and possibly because of this some very unsanitary pools are used.

It is doubtful if any bathing pool can be kept in such condition that it is absolutely safe for all bathers, as is sometimes claimed for certain pools; however, there are risks in all sports, and the risks of swimming can be kept low by providing the necessary facilities and exercising the proper sanitary control.

Sanitary Control of Bathing Pools

The facilities of bathing places vary from those common to the "old swimmin' hole" to those of the modern pool which uses water of the drinking standard and filtration, together with chemical treatment for purification. Modern pool facilities and improved design make it possible to reduce to a minimum the hazards common to bathing places. However, this minimum cannot be reached without proper use and control of the facilities.

There are several control measures which must be practiced even in the best designed pools.

Bacteria Quality of the Water: The present bacteria tests for bathing places make use of the confirmed test for the colon-aerogenes bacteria and the total twenty-four hour count at 37 C. on nutrient agar. The total plate count is indicative of the gross pollution in the pool, while the confirmed test shows pollution from the intestinal tract. The presence of various streptococci and staphylococci in the water may be of greater significance than the colon-aerogenes bacteria because of their association with respiratory and skin infections, and because of the large numbers which may be discharged from the nose and mouth. While no standard for streptococci has been developed, the presence of large numbers of streptococci should cause concern as to the sanitary condition of the pool.

Disinfection: A bathing place disinfectant should not only destroy the bacteria, but should destroy them rapidly, since the time the bacteria are in the water while passing from one bather to another may be very short. Chlorine and chloramines are the most widely used. Chlorine destroys the bacteria more rapidly than chloramine, but it is thought that chloramine is less irritating to bathers. Disinfection by adding hypochlorite powder directly to the pool from time to time is of doubtful value, because a residual will be absent when it is most needed.

The residual chlorine content is one of the best indexes of the sanitary quality of the pool water, and should be checked often by the pool operator to see that it is kept within the desirable range. The bathing suit and the body of the bather exert a demand on the residual chlorine and when a large number of bathers are in the pool the residual chlorine in the pool may be reduced from 0.4 or 0.5 parts per million to practically no residual unless the chlorine dosage is increased.

Bathing Load: The possibility of the transfer of infection among the bathers in-

1. Hasty, F. E.: Paranasal Sinus Infection and Swimming. J.A.M.A. 89:507 (August) 1927.
2. Taylor, H. Marshall: Otitis and Sinusitis in the Swimmer, J.A.M.A. 113:891-894.

creases greatly with an increase in the number of bathers in the pool. Five to eight hundred gallons of water per bather between recirculation or changes of the pool water is a basis for determining the maximum allowable bathing load. Because of the relationship between the bathing load and the opportunity for the transfer of infection, as well as the effect of the bathing load on the chlorine residual, it is important that the bathing load be controlled.

Overflow Gutters: The scum gutter is a means of carrying away the floating contaminating material, and is a place into which bathers can expectorate water and phlegm after diving. Some pools close the scum gutters to save water. This practice makes for unsanitary conditions and should be avoided.

Dressing Rooms: Skin infections, such as so-called "athlete's foot", are readily spread in the dressing room. The floors and benches of the dressing room and the walkways should be cleaned by washing with a disinfecting solution of chlorine. Foot baths containing 0.3 to 1.0 per cent available chlorine should be so located that the bathers must pass through them in going to and from the pool. Warm water for the showers is essential; without it, the bathers will neglect proper showering before entering the pool.

Personal Regulations and Supervision of Bathers: Probably the most effective means of controlling the sanitary conditions of a pool is to control the bathers. Personal regulations should be posted regarding a soap and warm water shower bath in the nude before entering the pool, the use of foot baths, the use of toilets, the exclusion from the pool of any person having a skin disease, sore or inflamed eyes, colds, nasal or ear discharges, any communicable disease, or cuts, blisters, and open sores; and forbidding spitting and blowing the nose into the pool, together with information concerning the risks that may accompany bathing in unsanitary pools. The posting of regulations will be ineffective unless they are accompanied by supervision.

The writer believes that public health officials can accomplish a great deal toward better swimming pool sanitation through instruction of the bathers and the pool attendants in personal hygiene and sanitation. The life guards and pool supervisors usually have had considerable instruction in the principles of life saving and artificial respiration, but very often are poorly informed concerning the hygiene and sanitation of bathing pools, which is of great importance in their work. At many public pools, instruction on swimming and life saving is provided for children; if this instruction included information on the hygiene and sanitation of bathing pools, the bathers themselves would help to keep the pool clean and sanitary. They would observe hygienic precautions themselves, and for their own protection would see to it that their fellow bathers attempted to maintain sanitary conditions.

Public health departments cannot keep the risks of swimming pools at a minimum by occasional routine examinations of the pool. The routine examination of the pool will disclose critical situations and will aid the operators and attendants with their control problems, but the effective sanitary control requires the continuous efforts of the operator, attendants and bathers under the general direction of the health department. Unless the attendants and bathers cooperate in keeping the pool sanitary, other control measures will be only partially effective, and the pool may be a health menace.

Discussion

President Elliott: Dr. Carlton will open the discussion of Dr. Gotaas' paper.

Dr. R. L. Carlton (Winston-Salem): I thank the doctor for his paper, which is a very timely one.

There are just a few essentials for safe bathing: Pure, clear, alkaline water; chemical disinfection; clean suits and towels; shower baths and toilets; clean locker and dressing rooms; pre-entrance examinations; fenced enclosures; concrete runways; scum gutters; no overcrowding; safe drinking water; and an adequate number of lifeguards and attendants. These being provided, with proper maintenance and adequate supervision, swimming is a relatively safe sport.

Dr. J. A. Whitaker (Rocky Mount): Professor Gotaas has covered this subject so thoroughly that there isn't much left to be said. However, I think that those of us who are public health officials advocating sanitation principles commonly make the mistake of allowing our enthusiasm to get ahead of epidemiological data.

Even though swimming pools are common bathtubs, the fact remains that it is difficult to find convincing evidences of serious epidemics that can be attributed to them. My Board of Health asked me last year what was the actual danger from our old dip, fill and draw pool. The epidemic of so-called swimming pool fever had been attributed to our pool, but on closer investigation I found that this vague illness was coming from other pools and creeks also, including some of those that were managed under modern sanitary methods. I was an enthusiastic supporter of the idea of a new properly controlled pool—and we have such a pool now under construction—, but it is difficult to find

data to support the contention that the old bathing place was dangerous. It is probable that as long as violent water exercises are indulged in there will be otitis media and sinusitis from the very factors that Professor Gotaas brought out.

The doctor in Nashville, Tennessee, from whose paper he quoted, has brought out the probability that mucous membrane tissue adjacent to the openings of the sinuses are shrunk and bleached by exposure to water, even pure water. That being true, diving or swimming produces such violent changes in the atmospheric pressure of the upper respiratory tract that it is natural that bacteria, pathogenic bacteria, common to mucous membranes, would be forced into those sinuses and into the eustachian tubes.

I would like to emphasize again that when a community spends thousands of dollars constructing a modern swimming pool, it shouldn't attempt to economize falsely by employing individuals who are not trained both in the theory and in the practice of operating those pools. The operation of a swimming pool should not be in the hands of an amateur. It requires both technical skill and knowledge of the principles involved. The operator should know what he is doing when he operates the chlorinator. He should know better than to leave the aluminum sulphate feed open all day. Unless he understands the rudiments of the theory involved he will never operate the pool properly.

In addition to the technical operation, there is the factor of discipline. I think, as Professor Gotaas and Dr. Carlton told you, that management of the bathers is as important if not more important than the management of the water.

I would like to read from a supplement, Number 139, to the Public Health Reports: "While there might be an apparent scarcity of epidemiological indictments of the old type swimming pool, there is the fact that sporadic diseases are undoubtedly due to poor sanitation and bathing water. One reason, I believe, that we don't have more epidemics, is the fact that most bathers swallow very little water, and another factor is that there is a rapid turnover of water in most bathing places.

"Therefore, the same factors which make public drinking supplies dangerous don't necessarily operate as regards public bathing places."

It is agreed that common sense public health programs must recognize that bathing in polluted water is a potential danger, that unsanitary conditions surrounding public bathing places are a hazard, and that common decency as well as health consideration dictates that steps should be taken to secure for bathers clean environments.

At the Bedside.—Medical discussions at the bedside require careful consideration. Some able psychiatrists have warned of the psychic trauma of such medical talks and have advised that discussion of the patient's condition should always take place outside the sick room. But the situation, in my experience, is not so simple. The physician's contact with the patient in the hospital is too limited at best. If discussions at the bedside are conducted with discrimination and tact, they can be used as an effective therapeutic influence in reassurance. In many instances such indirect familiarization of the patient with his condition, with the reasons for the advised treatment and for the optimistic prognosis has a most beneficial result. A patient is more apt to resent too little rather than too much discussion of his condition.—Soma Weiss, M.D.: The Medical Student Before and After Graduation, J. A. M. A. 114:1714 (April 27) 1940.

RADICAL PERINEAL PROSTATECTOMY FOR CARCINOMA

JOHN E. DEES, M. D.

DURHAM

Carcinoma of the prostate is a very common disease, and in some respects a neglected one. Young[1], in analyzing 4,300 cases operated upon for prostatic obstruction at the Johns Hopkins Hospital, found that the obstruction in 10.7 per cent was due to carcinoma. Of the last 236 transurethral prostatic resections carried out at the Duke Hospital, 12.3 per cent were for carcinoma of the prostate. In 292 routine autopsies on men over 50 years of age, Rich[2] discovered occult or outspoken carcinoma of the prostate in 14 per cent. Moore[3], in a similar but more detailed study of 323 autopsies on men over 40 years of age, found carcinoma of the prostate in 19.2 per cent. Kahler[4], in a series of over 600 autopsies on men over 50, found prostatic carcinoma in 17.3 per cent. The United States Mortality Statistics for 1934 show that during that year 10.07 per cent of all carcinoma deaths in the male sex were due to carcinoma of the prostate, and in 1936 this disease accounted for 10.9 per cent of all cancer deaths in men. Carcinoma of the prostate was the cause of death more frequently than carcinoma of any other internal organ in the male, with the exception of the stomach and rectum.

Moore's pathological study brought out several most interesting facts. Of the 63 prostatic malignancies in his series, 52 were small, without metastases, and were limited to one anatomical lobe of the prostate, so that their points of origin could be determined. Seventy-three and 5 tenths per cent arose in the posterior lobe, 8.8 per cent in one lateral lobe, 14.8 per cent in the anterior lobe, and in only 2.9 per cent did the carcinoma arise within an area of benign prostatic hypertrophy. This is of great clinical importance, as it shows that over 80 per

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Read before the Durham-Orange County Medical Society, January 10, 1941.

1. Young, H. H.: Ultimate Results of Treatment of Carcinoma of Prostate by Radical Removal of Prostate, Vesical Neck and Seminal Vesicles, J. Urol. 29:531 (May) 1933.
2. Rich, A. R.: On Frequency of Occurrence of Occult Carcinoma of Prostate, J. Urol. 35:527 (March) 1935.
3. Moore, R. A.: Morphology of Small Prostatic Carcinomata, J. Urol. 33:224 (March) 1935.
4. Kahler, J. E.: Carcinoma of Prostate Gland: Pathologic Study, J. Urol. 41:557 (April) 1939.

cent of prostatic carcinomas begin in the posterior or lateral lobes of the prostate where they can be readily palpated and diagnosed in an early stage by rectal examination. Moore feels that metastases and invasion outside of the prostate are late manifestations of the disease, and he showed clearly that carcinoma and benign hypertrophy of the prostate were two distinct diseases occurring independently of each other.

The importance of early recognition of cancer while it is still in a curable stage is fully appreciated both by the medical profession and by the layman. They are on the alert for an ulcer that does not heal, a lump in the breast, or bleeding from any of the body orifices. Unfortunately, however, carcinoma of the prostate is silent in its early stages and usually remains asymptomatic until far advanced beyond the hope of cure. The discovery of early prostatic cancer, therefore, depends entirely upon the physician, and only by frequent routine rectal examination of all men over 50 years of age can we hope to make real progress against this common form of cancer. An indurated nodule or diffuse induration in a portion of the prostate should be viewed with suspicion, and cancer should be proven or ruled out—if necessary, by biopsy. Occasionally an early prostatic carcinoma is discovered because attention is directed to the prostate by obstructive symptoms arising from a coexisting benign prostatic hypertrophy. Rarely, the pathologist discovers carcinoma that had not been recognized clinically in the microscopic study of tissue removed at transurethral resection. However, carcinoma arises from the periphery of the prostate, and the juxta-urethral portion is involved late.

With nothing to offer a patient with early prostatic carcinoma except palliative measures, there is little incentive to its early recognition. Because, in the past, cases of early carcinoma of the prostate have rarely been discovered, and because most of these patients are first seen with far advanced cancer, the attitude towards the disease in general is a defeatist one. As a result, palliative procedures directed toward the relief of symptoms in advanced cases have become so highly perfected that there is a great tendency to apply these procedures even to those cases of early prostatic carcinoma which are possibly curable. There is no intention of discrediting procedures for palliation of advanced carcinoma. Transurethral resection gives immediate and dramatic relief from the symptoms of bladder neck obstruction. Deep x-ray therapy is of great value in relieving metastatic pain, and implantation of radium, in some cases, may slow the growth of the neoplasm. None of these measures, however, offer any hope of cure of the disease.

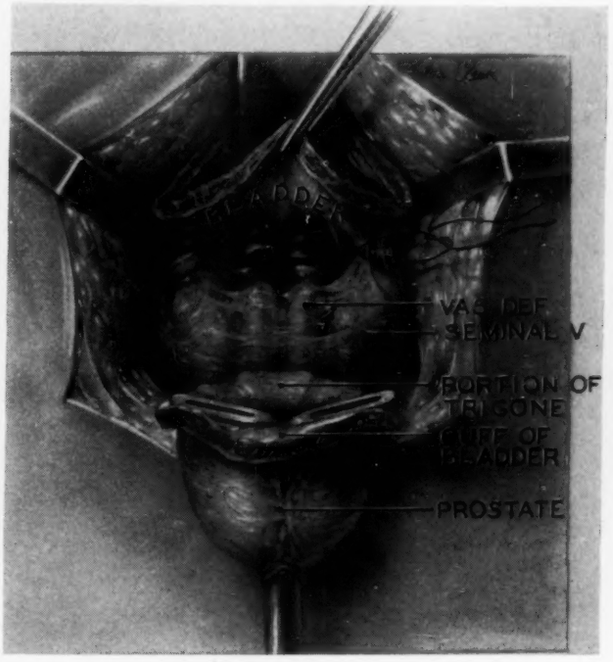

Fig. 1. Operative specimen removed at radical perineal prostatectomy.

The only procedure offering a chance of actual cure in clinically recognizable prostatic cancer is radical surgery, best exemplified by Young's radical perineal prostatectomy. Through a perineal approach the entire prostate, with its capsule, the bladder neck, the distal half of the trigone, the seminal vesicles, and the ampullae of the vasa are removed in one block (fig. 1). The external urethral sphincter is left undisturbed, and to it is anastomosed the bladder defect. Objections that have been raised to this operative procedure are fourfold—namely, technical difficulty, operative mortality, urinary incontinence, and the question of the ultimate result. Technically, the operation is usually not a difficult one for any urologist familiar with perineal surgery. There have been six hospital deaths in a total of 91 radical prostatectomies performed at the Johns Hopkins Hospital[5]. The operation can usually be carried out in from one and a half to two hours, and when contrasted

5. Colston, J. A. C.: Surgical Treatment of Carcinoma of Prostate, New England J. Med. 223:205 (August 8) 1940.

TABLE I

Reported Results of Treatment for Carcinoma of Prostate

Author	No. Cases	Treatment	Survival 2 yrs.	3 yrs.	4 yrs.	over 5 yrs.
Barnes[6] (1940)	146	Resection	40%	—	—	—
Wishard[7] (1940)	69	Resection	—	—	1.4%	—
Thompson[8] (1938)	107	Resection	—	—	—	9.3%
Caulk[9] (1937)	129	Resection, x-ray and radium	—	30%	18 %	12 %
Bumpus[10] (1926)	178	Prostatectomy (enucleation)	—	—	—	11.7%
Barnes[6] (1940)	27	Resection and x-ray	48%	—	—	—
Hager[11] (1937)	396	Various types	—	—	—	1.7%
Barnes[6] (1940)	113	Suprapubic cystostomy	29%	—	—	—
Bumpus[10] (1926)	122	Radon	—	—	—	3.3%
Ferguson[12] (1937)	43	Radon	33%	9.3%	7%	2.3%
Barringer[13] (1936)	351	Radon	—	8.3%	—	5.7%
Barnes[6] (1940)	45	X-Ray	44%	—	—	—
Nisbet[14] (1935)	48	X-ray	—	4%	—	—

TABLE II

Reported Results of Radical Perineal Prostatectomy for Carcinoma

Author	No. Cases	Operative Mortality	Survival
Young[1]	50	4 (8%)	33 cases were operated upon more than five years previously. Of these 16 lived, or are living, 5 to 20 years without evidence of recurrence, 13 being over 7 years postoperative.
G. G. Smith[15]	50	5 (10%)	25 died of recurrence, 6 living 5 to 9 years postoperative; 6 died of intercurrent disease without recurrence; 14 are alive and well a few months to 7 years. Total of 11 lived over 5 years.
Wildbolz[16]	40	3 (7½%)	In 35 cases followed, 13 died of metastases; 4 of intercurrent disease in 1½ to 3 years; 6 are living and well, 1-3 years; 10 are living without recurrence, 3-15 years; 2 recurred at 6 and 9 years.
Hinman[17]	12	—	No statistics. 1 alive 10 years.
Rolnick[18]	12	6 (50%)	4 cases living without recurrence 1 to 2 years; 1 recurrence; 1 not followed.
Leadbetter[19]	4	0	All living without recurrence less than 1 year with perfect control.
Dees	8	0	All living without recurrence 3 months to 2½ years. 7 have perfect control.

6. Barnes, R. S.: Carcinoma of Prostate: Comparative Study of Modes of Treatment, J. Urol. 44:169 (August) 1940.
7. Wishard, W. N., et al.: Transurethral Resection in Treatment of Carcinoma of Prostate, J. Urol. 42:1088 (December) 1939.
8. Thompson, G. J., and Emmett, J. L.: Treatment of Carcinoma of Prostate Gland by Transurethral Methods, Urol. and Cutan. Rev. 42:547 (August) 1938.
9. Caulk, J. R.: Value of Author's Cautery Punch Operation for Relief of Obstruction in Carcinoma of Prostate, Urol. and Cutan. Rev. 36:151 (March) 1932.
10. Bumpus, H. C.: Carcinoma of Prostate; Clinical Study of 1000 Cases, Surg., Gynec. and Obst. 43:150, 1926.
11. Hager, B. H., and Hoffman, E. F.: Statistical Data on 396 Cases of Carcinoma of Prostate Observed at Los Angeles General Hospital from January 1, 1923, to January 1, 1936. J. Urol. 37:180 (January) 1937.
12. Ferguson, R. S.: Diagnosis and Treatment of Early Carcinoma of Prostate, J. Urol. 37:774 (June) 1937.
13. Barringer, B. S.: Treatment of Prostatic Carcinoma, Surg., Gynec. and Obst. 62:410 (February) (No. 2A) 1936.
14. Nisbet, A. T.: Deep Roentgen Therapy of Carcinoma of Bladder and Prostate, Am. J. Roentgenol. 33:807 (June) 1935.
15. Smith, G. G.: Total Perineal Prostatectomy for Cancer, J. Urol. 22:377, 1929.
16. Wildbolz, H.: Die Enfolge Operativer Therapie des Prostatakarznoms, Schweiz. Medizin. Wchnschr. 726, 1928.
17. Hinman, F.: Three Types of Radical Urogenital Surgery of Limited but Well Defined Applications: Carcinoma of Prostate; Genital Tuberculosis; Tumor of Testis, S. Clin. North America, 11:999 (October) 1931.
18. Rolnick, H. C.: Radical Perineal Prostatectomy, J. Urol. 35:527 (May) 1936.
19. Leadbetter, W. F.: Radical Operation for Carcinoma of Prostate, S. Clin. North America, 19:783 (June) 1939.

with certain other operations aiming at the cure of cancer, such as combined resection of the rectum, it seems by no means formidable. Urinary incontinence, which occurred in a fairly large proportion of cases done early in the development of the operation, has largely been eliminated by recent refinements of Young's original technique, especially in the anastomosis between the bladder defect and the membranous urethra. Seven of the author's 8 cases have perfect urinary control, although three were several months after operation in acquiring it. Colston[5] reports that 68 per cent of the last 34 radical prostatectomies performed at the Johns Hopkins Hospital have excellent or good urinary control, and none were totally incontinent. This is about the average result obtained by others during the past three or four years.

In order to compare the ultimate results obtained from radical prostatectomy with those obtained from various palliative procedures, the data presented in tables I and II have been collected from the recent literature. The difficulty in proving a cure in cancer of any type is fully realized. A fair number of cases subjected to radical perineal prostatectomy have died of metastases six, seven or eight years after operation. One case, recently reported by Colston, died of heart disease thirteen years after subtotal radical perineal prostatectomy. Autopsy disclosed prostatic carcinoma cells only in the tips of the seminal vesicles which had not been removed at operation, and there were no metastases. Therefore, "cure" in its clinical sense must signify simply the absence of demonstrable local recurrence or metastases or symptoms attributable to one of these for a specified number of years.

It is true that the patients on whom radical perineal prostatectomy were carried out had clinically smaller and less advanced carcinomas than did most of the patients in the group depicted in Table I, many of whom were far advanced cases. However, in the group treated conservatively, carcinoma in many of the patients surviving for more than four years was diagnosed only from microscopic study of the surgical specimen, and accordingly represents a much earlier lesion than those in the group subjected to radical removal.

The selection of radical prostatectomy must still remain an individual problem in each case. Certainly, there must be no metastases demonstrable by x-ray, and the carcinomatous process must be confined within the capsule of the prostate. The patient's life expectancy, as determined by age, and the presence or absence of serious constitutional disease, must also be taken into account.

In summary, three points should be reemphasized. Carcinoma of the prostate is a very frequent disease, accounting for over 10 per cent of all carcinoma deaths in the male. Real progress against this disease depends mainly upon its early recognition through routine rectal examinations on all men over 50. Radical prostatectomy is the only chance for cure of prostatic carcinoma, and is indicated in most cases recognized in their early stages.

Acute Pyelonephritis. — Acute pyelonephritis is the commonest disease of the kidneys. Its clinical features correspond to those recognized under the term, "pyelitis." In our experience the infection almost always involved the renal parenchyma as well as the pelvis, and hence "pyelitis" is a misnomer. The nature of the parenchymatous involvement is essentially the same, irrespective of the type or origin of the infection. Occasionally infection of the interstitial tissue without involvement of the nephron accounts for cases with all the systemic manifestations of the disease, including pain of renal origin, but without the characteristic urinary findings. Acute vascular lesions develop at times in the early stage of pyelonephritis, and it is of special interest that in some cases hyperplastic arteriolosclerosis developed within as short a time as six months after the onset of infection. Arterial hypertension, however, is usually absent in acute pyelonephritis. This observation is in harmony with previous conclusions that under certain circumstances severe obliterative arterial or arteriolar lesions may develop within as short a period as a month or two.—Soma Weiss and Frederic Parker, Jr.: Relation of Pyelonephritis and Other Urinary-Tract Infections to Arterial Hypertension, New England J. Med. 223:960 (December 12) 1940.

Emotional Causes of Fatigue. — In one hour of frantic worrying, or in one riot of emotion over some little happening, or in one "post mortem" over some unpleasant experience or ancient family row, a woman will use up more energy than a calm sensible person uses in a day. Some of these persons are so psychopathic, touchy, shy, diffident, or irritable that all the problems of working and living and adjusting to contact with their fellows are difficult and wearying. Others, and particularly women about the age of forty, are perfectionists: They want everything just so, and they wear themselves out trying to reform husband and to make the home spotlessly clean. — Walter C. Alvarez: What's Wrong With the Patient Who Is Always Tired?, Minnesota Medicine, 23:788 (November) 1940.

GASTRIC HEMORRHAGE AND THE ANDRESEN DIET

C. T. SMITH, M. D., F. A. C. P.

ROCKY MOUNT

In his article on the treatment of gastric hemorrhage, published in 1927, Andresen[1] set forth four requirements for treatment:

(1) A clot or clots must be permitted to form at the site of the bleeding. To encourage clot formation, the patient must be kept quiet and his mind put at ease. As the restlessness in hemorrhage is due to fear and thirst, something to combat the thirst at the onset is desirable, and a liquid diet is more reassuring than starvation.

(2) The blood pressure, lowered as a result of the hemorrhage, must not be raised so suddenly as to blow out these clots. Small transfusions—150 to 200 cc.—may be used at first to introduce new coagulation factors into the patient's blood. In the absence of compatible donors, 10 to 20 cc. of human blood may be injected into the muscles. Later the larger transfusions may be used.

(3) Shock must be combatted but not overtreated, as too much stimulation often results in recurrent hemorrhage. To combat shock he suggests the use of morphine and replacement of the blood volume. The Andresen formula taken by mouth will replace the fluid volume in moderately severe hemorrhage, but in the more severe cases the physician will have to decide whether to give the patient intravenous saline or small transfusions, or to take the risk of raising the pressure with large transfusions.

(4) Digestion of the edges of the blood vessel wound by the gastric juices must be prevented if possible. Andresen's formula is particularly effective in meeting this requirement. He recalls that one of two conditions is present in the stomach after hemorrhage: It is either empty or filled with partially digested clots. The high protein content of the clots stimulates secretion of gastric juices. As an empty stomach is never at rest, the stomach should be kept partially filled with a soothing substance that will mix with the secretions and favor coagulation. He feels that all of these requirements are met in a gelatin solution flavored with orange juice and fortified with lactose. Four to six ounces of this is fed every 1½ or 2 hours for two or three days, then alternated with cereal gruel, milk, cream and lactose mixtures. At the end of eight days a regular ulcer diet is given. The gelatin and gruel mixtures are given just slightly warm. Andresen deplores the use of ice internally as well as externally because of the congestion it induces.

Andresen Diet For Treatment of Gastric Hemorrhage

	Ounces	*Gm.*
Gelatin solution		
Gelatin	1	20
Lactose	3	90
Juice of 1 orange		
Water	32	1,000
Gruel mixture No. 1:		
Cereal gruel (oatmeal, barley or cornmeal)	16	500
Milk	14	420
Cream	4	120
Lactose	3	90
Gruel mixture No. 2:		
Cereal gruel (oatmeal, barley or cornmeal)	12	350
Milk	32	1,000
Cream	4	120
Lactose	4	120
First and second days:		
Gelatin solution	4 ounces	
Feedings every 1½ hours.		
Third day:		
Gelatin solution	4 ounces	
Gruel mixture No. 1	4 ounces	
Feedings every 1½ hours.		
Fourth day:		
Gelatin solution	5 ounces	
Gruel mixture No. 1, alternating	5 ounces	
Fifth and sixth days:		
Gelatin solution	6 ounces	
Gruel mixture No. 1, alternating	6 ounces	
Seventh and eighth days:		
Gelatin solution	6 ounces	
Gruel mixture No. 2, alternating.	6 ounces	
Add to gruel mixture, each time, one of the following: 3 ounces cereal, 1 soft poached egg, custard or jello.		
Feedings every 2 hours.		
Ninth day and thereafter:		
Long Island College Hospital Ulcer Diet.		

X-ray studies are not made for two weeks and preferably not until the fourth week.

The Andresen treatment has been used routinely for the past three years by Dr. J. G. Smith and the author on all patients entering Park View Hospital with gastric hemorrhage.

Read before the Seaboard Medical Association of Virginia and North Carolina at Washington, N. C., December 4, 1940.

1. Andresen, A. F. R.: The Treatment of Gastric Hemorrhage. J. A. M. A. 89:1397 (October 22) 1927.

	Patient	Sex	Age	R. B. C. (Millions)	Hemoglobin Per Cent	Hematemesis	Melena	Transfusion	Diagnosis	Result	Days Stay
1	E. E. P	M	56	4.32; 3.83; 4.43	80	Yes	Yes	No	Undetermined	Relieved	15
2	R. T. J.	M	41	4.31; 3.14; 3.29	84	Yes	Yes	No	Marginal Ulcer	Relieved	9
3	J. H. S.	M	53	4.10; 3.60; 3.80	87	Yes	Yes	No	Hypertension	Relieved	3
4	M. P.	F	54	3.22; 3.31	64	No	Yes	No	Marginal Ulcer	Relieved	11
5	I. C.	M	47	1.81; 2.75	38	No	Yes	II	Duodenal Ulcer	Relieved	7
6	W. M. W.	M	49	1.96; 3.54	45	Yes	Yes	III	Duodenal Ulcer	Relieved	9
7	R. W. S.	F	77	2.48; 3.47	51	Yes	Yes	I	Marginal Ulcer	Relieved	12
8	C. L. B.	F	71	1.09; 3.56	71	Yes	Yes	I	Undetermined	Relieved	10
9	E. M.	M	23	4.61; 4.04	75	Yes	Yes	No	Undetermined	Relieved	14
10	B. T. D.	M	64	3.68; 3.94	55	No	Yes	III	Gastric Ulcer	Relieved	14
11	W. H. P.	M	44	4.34; 2.66; 3.29	58	No	Yes	I	Undetermined	Relieved	23
12	S. T. R.	F	61	4.02; 3.70	77	Yes	Yes	No	Undetermined	Relieved	17
13	R. W. S.	F	78	2.67; 2.32; 3.53	32	Yes	Yes	IV	Marginal Ulcer	Died	3
14	W. T. S.	M	30	4.30; 4.00	80	Yes	Yes	No	Duodenal Ulcer	Relieved	10
15	T. C. L.	M	70	3.69	60	Yes	Yes	No	Undetermined	Relieved	14
16	J. A.	M	52	4.05	71	No	Yes	No	Duodenal Ulcer	Relieved	14
17	J. W. S.	M	41	3.19; 2.46; 3.10	32	Yes	Yes	I	Alcoholic Hepatitis	Relieved	12
18	W. W.	M	72	1.85; 3.74	27	No	Yes	II	Hypertension	Relieved	16
19	J. W. S.	M	41	1.87; 1.11; 2.60	25	Yes	Yes	II	Alcoholic Hepatitis	Died	4
20	M. H.	M	24	1.17; 3.22	29	Yes	Yes	I	Gastric Ulcer	Relieved	18
21	R. T. J.	M	43	4.98	71	No	Yes	No	Marginal Ulcer	Relieved	6
22	E. E.	F	69	4.05; 2.61; 3.62	62	Yes	Yes	No	Duodenal Ulcer	Relieved	19
23	S. P. B.	M	49	4.28; 3.98; 4.39	78	Yes	Yes	No	Gastric Ulcer	Relieved	12
24	B. B.	M	44	1.79; 2.94	35	Yes	Yes	I	Duodenal Ulcer	Relieved	21

Analysis of the Chart

Three of the patients were treated twice for the same condition with intervals of complete recovery.

The drop in the red cell count occurred in the cases entering the hospital early; the initial count did not indicate accurately the total loss of blood. A red cell count was made before discharge to indicate the degree of improvement.

Seventeen of the 24 cases had hematemesis. All had melena. In the 7 cases without hematemesis, either the patient had vomited blood on some previous occasion, or the lesion was located in the stomach or duodenum. In 6 of the cases the diagnosis was undetermined. In 2 cases of hypertension the bleeding point could not be demonstrated by x-ray. Diagnoses of marginal ulcer were entirely presumptive; in each case the patient had had a gastro-enterostomy at some previous time. These doubtful diagnoses are not so significant, however, since the discussion concerns the treatment of gastric hemorrhage.

Transfusions were given to 12 patients to combat actual or impending shock. Two cases received transfusions before being put on the ambulance to be sent to the hospital. There was apparently no recurrence of hemorrhage in any patient of this series during the treatment.

Of the 2 patients that died, one was 78 years of age, and one was thought to have a hemorrhage secondary to alcoholic hepatitis complicated by syphilis.

The Control of Gastric Acidity in the Treatment of Ulcers.—One still attempts to keep the gastric acidity under control, but not necessarily neutralized. This is accomplished by frequent feedings rather than by alkalies. Nothing can be done about hereditary or constitutional factors, but much emphasis is placed on keeping the patient at ease, avoiding physical and nervous strains, rearranging the social environment, and providing for good nutrition, the careful mastication of food and the avoidance of foods and drinks that are mechanically or chemically irritating.—T. Grier Miller: The Management of the Complications of Peptic Ulcer, New England J. Med. 224:401 (March 6) 1941.

Competition. — Competition between and among medical men is the very essence of promoting and maintaining a high type of medical service. If a physician is not well trained, if he does not continue to keep abreast of new and better methods of diagnosis and treatment, if he is not continually working, reading and studying the methods of other medical men in other clinics, he soon loses his patients, his practice and his living to his competitors who do all these things and consequently render superior medical service. The public soon finds out about a doctor's results in his work. His every failure is advertised by an invisible but by no means ineffectual telegraph system. And when it comes to the matter of choosing a physician, most individuals are desirous of having first-rate attention, not second or third rate. In socialized systems, that competition between medical men is largely lost. The physician has no particular competitive impetus to either improve himself or the character of his work. He gets paid anyhow and beyond certain modest limits cannot increase his income no matter how hard he works, no matter how much he knows. If he has a pull with the higher administrative officers that, in and of itself, is of more value than the particular type of service that he may be rendering.—A. C. Callister: The Medical Profession's Ideals in Medical Service, Rocky Mountain M. J. 38:111 (February) 1941.

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JUNE, 1941

THE STATE SOCIETY MEETING

The eighty-eighth annual meeting of the Medical Society of the State of North Carolina was held at Pinehurst, May 19-21. While the attendance was not quite up to last year's record enrollment, it was above the average of the past few years, and the papers read both in the general sessions and in the section meetings were of a high order. The proceedings will be published in a future issue of the NORTH CAROLINA MEDICAL JOURNAL, and only a few impressions will be given here.

As was to be expected, the retiring president, Dr. Hubert Haywood, completed his administration with noteworthy addresses to the House of Delegates and to the first General Session. The latter, which appears as the leading article in this issue, was highly complimented by Dr. Frank Lahey, President-Elect (now President) of the American Medical Association. Dr. Lahey's address, which followed Dr. Haywood's, will long be remembered by those who heard it. It will probably appear in next month's issue of this journal; but unfortunately some of the best things he said were spoken "off the record". In addition to being one of this country's truly great surgeons and teachers, Dr. Lahey is also one of its most attractive speakers.

For the first time, the House of Delegates had its first meeting Monday afternoon, as recommended by Dr. Tom Long last year. A few pessimists predicted that there would not be a quorum present—but a large proportion of the delegates were on time. The extra time permitted for the various reports, resolutions, recommendations, and other items of business that had to be considered served such a useful purpose that this innovation will probably be made permanent.

The absence of the beloved Tom Long was felt by all, and, together with the dreary situation of the world, had a sobering influence upon the gathering. Dr. Manning, with Miss Margaret Long's capable assistance, had the secretary's affairs in excellent order. The heartiest vote cast by the House was in support of a resolution to recommend to the Trustees of the Hospital Saving Association that they take such steps as are necessary to make Dr. Manning Medical Director of the Association, "at a salary commensurate with the responsibility entailed." It was felt that, after Dr. Manning had nurtured the Hospital Saving Association through a trying infancy to a membership of nearly 150,000, without any financial reward whatever, it was really belated justice to recognize the scriptural principle that "the laborer is worthy of his hire." With the addition of the surgical and obstetrical insurance feature, Dr. Manning will have a whole time job; and there is no man in the state so capable of handling it as he.

Perhaps the most important action taken by the House was to authorize the Hospital Saving Association to add surgery and obstetrics to its insurance contract. A few years ago this would have been considered radical; but many state and county medical societies have gone even further to meet the clamor for prepaid medical services, and to forestall, if possible, compulsory sickness insurance under political control.

Dr. Donnell Cobb, of Goldsboro, was made President-Elect. Those who know him—and what doctor does not?—know how well fitted he is for this position.

Dr. Roscoe D. McMillan, of Red Springs, was elected Secretary and Treasurer. His

energy, ability, and personality should well qualify him for this most important post. He has the Scotch conscientiousness that makes him do his best in anything he undertakes. His recent remarkably successful record as District Governor of Rotary shows that he is a good organizer. To him, to President Webb Griffith, and to the entire administration of the Society, the NORTH CAROLINA MEDICAL JOURNAL pledges its heartiest cooperation. The inaugural address of Dr. Griffith is carried in this issue, together with a statement from our new Secretary, Dr. McMillan. Both are well worth reading.

* * * *

SERUM VERSUS CHEMOTHERAPY IN PNEUMOCOCCUS INFECTIONS

Bellevue Hospital, in New York City, has a service devoted to the study of pneumonia, and from this department many valuable studies have appeared. The most recent contribution of these special workers throws a much needed light upon the relative importance of serum therapy and chemotherapy in the treatment of pneumonia[1]. Their results are somewhat iconoclastic, and, of course, require verification, but it appears from their study that the mortality rate in 306 patients, treated with chemotherapy alone, was somewhat better than in 301 patients treated with chemotherapy, plus specific sera.

Should these results receive widespread verification, as seems probable from the unimpeachable character of the testimony, a great advance will have been made in the therapy of pneumonia. Serum treatment is complicated and expensive and, though one may regret the abandonment of a method which has cost so much in both labor and money, yet no one will forget the pioneer workers, especially Dr. Rufus Cole and his colleagues at the Rockefeller Hospital, who first elucidated so brilliantly the pneumonia problem. Their studies aid us in the appreciation of what is perhaps the most spectacular and fruitful therapeutic advance in the history of medicine, and, while rejoicing in the new, let us remember the old with gratitude.

1. Plummer, et al.: Chemotherapy Versus Combined Chemotherapy and Serum, J. A. M. A. 116:2366 (May), 1941.

THE A. M. A. VERDICT AND THE NATIONAL PHYSICIANS' COMMITTEE

The more one ponders the implications of the A. M. A. verdict, the more confused he becomes as to its effect on the private practice of medicine in the United States. The verdict was apparently received with indifference by the public generally. Most of the newspaper editorial comment was favorable to the medical profession; but the world situation has so overshadowed every other issue that the trial had little news value. Two things are certain, however: one, that the case will be appealed by the American Medical Association; the other, that the verdict will be used by the advocates of political medicine to argue that the people want prepaid medical insurance. The final decision, of course, will probably be rendered by the Supreme Court; and that body is now so thoroughly New Dealized that we can expect little from that source.

The most important body to appeal to is the intelligent members of the general public. If we can only get the real facts before them, we need not fear the outcome. We doctors have at least two ways of getting our cause before the public. One is by the personal touch—using our natural approach to our individual patients and their families. The other is through the National Physicians' Committee, which is using the power of the radio and the press to appeal to the public.

A recent public utterance should make us realize the necessity for action. In a public forum a law professor who was associated with Thurman Arnold in preparing the indictment of the A. M. A., gloating over the verdict, said that the American Medical Association was ruled by Morris Fishbein; that the true leaders of the profession favored socialized medicine. Such statements broadcast by men connected with the Government should be refuted.

Dr. Frank Lahey said at Pinehurst last week that the American Medical Association would be really appreciated only after it was destroyed. God forbid that this should ever come to pass! Let us back up the National Physicians' Committee with our moral and material support. A check sent to the National Physicians' Committee, Pittsfield Building, Chicago, Illinois, is the most tangible expression of one's disapproval of medical regimentation by politicians.

THE EARLY RECOGNITION OF CORONARY HEART DISEASE

THE STORY OF CLINICAL PULMONARY TUBERCULOSIS, by the late Dr. Lawrason Brown, tells the fascinating story of the developments that have come in the diagnosis and treatment of tuberculosis. It is interesting to note that no real progress was made in the control of the great white plague until clinicians learned how to recognize it in its incipiency. Laennec immortalized himself by inventing the stethoscope and then using it to recognize the physical signs of tuberculosis; but he himself was a victim of the disease before he learned to recognize early forms of it. The great French clinician, P. C. A. Louis, took up the torch from Laennec and carried it on to the triumph of early recognition and treatment of tuberculosis.

Is it possible that treatment of coronary disease now parallels that of pulmonary tuberculosis a century ago? It is very seldom recognized, or even suspected, until it has reached a late, if not a terminal stage. Then the victim is put to bed for two months or longer, if he survives the first shock. Is it too much to hope that, with further clinical observation by men as keen as Laennec and Louis, earlier diagnoses may be made by clinical means alone? Remembering the part the x-ray has played in picking up a certain number of cases with no physical signs whatever, dare we not hope that with further refinements in the electrocardiograph, and with increased experience in the interpretation of its tracings, potential victims of this modern great plague may be identified in time to stay its progress? Is it not possible that, just as rest proved to be the greatest single therapeutic measure in dealing with lung disease, so it may also be found effective in the early treatment of coronary heart disease? If eight weeks in bed will restore many men to health sufficient for them to carry on their work for months, years, or even decades after the disease has progressed to the point of definite occlusion of a coronary vessel, should not a shorter rest period earlier in its course be infinitely more effective?

These questions are all unanswerable just now; but at least they are worth pondering. It will be argued at once that heredity is the greatest factor in coronary heart disease; but for centuries the same thing was said of consumption.

DR. CHARLES JOSEPH WHALEN

State medical journalism suffered a great loss when Dr. Charles J. Whalen, of Chicago, died on April 7, 1941. In 1913-14 he was President of the Illinois Medical Society. For twenty-two years he served as editor of the *Illinois Medical Journal;* for nearly twenty-five years he was a delegate to the American Medical Association. In all these positions, and in others as well, Dr. Whalen served nobly the cause of organized medicine. His fearless pen made the *Illinois Medical Journal* one of the most influential of the state medical publications.

The following two paragraphs from an editorial tribute in the May number of the *Illinois Medical Journal* express the feeling of all who knew Dr. Whalen:

"His efforts for the interest of medicine were not restricted by state lines, but were for the entire nation. Many of his editorials were published in part or in their entirety by many journals throughout the country. For many years while he was endeavoring to warn this nation of encroaching dangers, many thought it was the cry of "Wolf! Wolf!". But recent developments prove unmistakably that Dr. Whalen, many years ago, could see the changing trends in this country which he believed would eventually affect the health of our people and lower the standards which medicine had been gradually building up through the past century."

"Physicians of Illinois and many throughout this country will long cherish the memory of Dr. Whalen whom they have all greeted so many times at meetings in Illinois and elsewhere. They will recall with pride that he has long been interested in promoting the best in medicine, and has invariably had in mind, the interests of both the laity and the medical profession in his many editorial comments. Our people will remember him because of his high and noble standards, his knowledge of the aims and needs of our profession, and his constant efforts to do his part in the march of medical progress. Always interested in research, and in experimental work in the laboratory to contribute further to the present day knowledge concerning disease, its cause and alleviation, his passing is not only a loss to Illinois, but to the nation."

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

Daisy M., a white female, 50 years of age, was first admitted to the medical service of the hospital December 3, 1939, having been sent in by the intern on the outside service to have fluid removed from her abdomen.

The patient stated that for many years she had had an abdominal mass which had not bothered her a great deal until about two years ago, when she first noticed that it was growing. During the past several months her abdomen had increased considerably in size and she had begun to have pain in each flank. She had no other complaints except rather stubborn constipation. Her digestion had been good. She had had no swelling of the ankles or shortness of breath until recently.

Her husband and all her children were well. There was no significant ancestral history. She had had no very serious illness previously.

Physical examination revealed a chronically ill 50 year old white female. Her skin had a dusty color. Her teeth were in poor repair. Her lungs expanded equally, but the expansion was limited. The breath sounds were clear and no rales were present. There was a very great amount of fluid in the abdomen—so much that no mass could be palpated. There was an ulcer over the lower third of the right tibia. The axillary, epitrochlear, popliteal, femoral and inguinal lymph nodes were palpable and shotty. Her blood pressure was 140 systolic and 80 diastolic. Soon after admission abdominal paracentesis was done and very bloody, free-running fluid was obtained. After a basin full (2400 cc.) of fluid had been removed the pulse rose from 84 to 108, the patient became faint, and the withdrawal of fluid was stopped. Two days later 3,000 cc. of fluid, having the appearance of sherry wine, was withdrawn. The patient felt much better afterward, and was relieved of her pain. A hard, nodular mass was now palpable in the right flank and the right lower quadrant, separate from the liver. Sixteen days later not much fluid had accumulated and the mass was still palpable. No nodules were felt in the liver. The patient was discharged on December 31, 1939.

Laboratory work on this first admission showed 2,800,000 red cells, 9 Gm. of hemoglobin, and a normal white and differential count. A smear made from the first specimen of abdominal fluid showed chiefly red cells, with occasional leukocytes. A differential count of the leukocytes revealed 60 per cent polymorphonuclears and 40 per cent lymphocytes. The specific gravity was 1.046. The urine was yellow, turbid and acid, with a specific gravity of 1.024, a 3 plus reaction for albumin, numerous white cells, and 10 to 12 red cells per high power field. The Kline test was negative. The blood nonprotein nitrogen was 37.5 mg. per 100 cc., and the blood sugar was 111 mg. per 100 cc. Culture of the abdominal fluid was negative. Examination of the fluid for tumor cells resulted in the following report: "Tumor cells present. Examination for tumor cells in fluid is not reliable and the report should always be interpreted in the light of clinical findings." During her stay in the hospital the patient's pulse ranged between 95 and 120 and her temperature between 99 and 100 F., gradually becoming normal after the first week.

The second admission was on April 9, 1940. Since her discharge from the hospital she had gotten along fairly well, except that the fluid had gradually accumulated again, causing dyspnea. She was readmitted for paracentesis. The physical findings were essentially the same as before. The abdomen was markedly distended with fluid and no masses were palpable. The superficial lymph nodes were noted as being enlarged, and having a shotty feel. On the day of admission 3,500 cc. of brown fluid which smelled like blood was removed. The patient felt much better. By ballottement a large smooth mass could be felt in the right lower quadrant. Four days later, 3,200 cc. of thick chocolate colored fluid was removed, revealing a very hard mass in the right lower and upper quadrants. On April 7, 7,800 cc. of dark brown fluid was removed. An inguinal lymph node was removed and diagnosed as "chronic lymphoid hyperplasia." Two specimens of fluid were examined for tumor cells. In one no tumor cells were reported; in the other tumor cells were reported to be present, with the caution

that this diagnosis should be taken with a grain of salt. X-rays were made of the chest and the long bones. They showed no evidence of metastatic tumor. A barium enema showed extrinsic narrowing at the rectosigmoid junction. The laboratory findings on the second admission showed 3,370,000 red cells, 11½ Gm. of hemoglobin, and a normal differential count. The albumin had disappeared from the urine and there were only 8 to 10 white cells per high power field. The blood nonprotein nitrogen was 26 mg. per 100 cc. Before the patient left the hospital, not quite a month later, her red cell count had increased to 4,460,000, and she had 15 Gm. of hemoglobin. She had no fever during the hospital stay.

The third admission was on December 30, 1940. Another paracentesis was done and creamy yellow fluid was obtained. Her leukocyte count showed 15,600 cells, with 5 per cent juveniles, 26 per cent stabs, 63 per cent segmented cells, and 7 per cent lymphocytes. The hemoglobin was 7½ Gm. No red cell count was done. The urine was negative. She had no fever. Her pulse varied between 90 and 100. She was discharged on January 1, 1941.

The fourth and last admission was on February 15, 1941. Until two days before admission there had been gradual increase in the size of the abdomen, but two days prior to admission the ascites increased suddenly and to tremendous proportions. Examination of the lungs revealed mucous rales. The heart was deviated to the left, and there was a systolic blow over the valve areas. There was marked tachycardia, and the radial pulse was barely perceptible. After 15 liters of fluid was removed a mass could be felt in the lower abdomen. The intern who withdrew the fluid felt that he had left at least an equal amount in the abdominal cavity. The liver could not be felt because of the tightness of the abdominal wall. The veins of the abdominal wall were markedly enlarged. There was a generalized edema and the skin was brown. By February 17 the patient had again accumulated a large amount of fluid, and 5 liters were removed. The patient was in very poor condition from the time of admission. Urinalysis was negative. There were 3,262,000 red cells and 9 Gm. of hemoglobin. The white cell count was 31,500 with 2 per cent juveniles, 36 per cent stabs, 48 per cent segmented cells, and 14 per cent lymphocytes. The pulse varied from 100 to 150, and the temperature was subnormal. The respirations varied from 18 to 24, dropping to 10 just before death on February 19, 1941.

Discussion

DR. A. DET. VALK: This is a very interesting case—interesting because of the large amount of fluid obtained, and the variety of colors presented. I think the thing to consider first would be the fluid in the abdominal cavity. From the clinical findings we would rule out any cardiac or renal condition. The possibility of cirrhosis or carcinoma of the liver could be ruled out from the fact that she had no jaundice. I do not know if patients with cirrhosis would survive that long or not; patients with carcinoma would not. The possibility of some type of peritonitis, possibly tuberculous or carcinomatous from implantations or metastases from some other point in the peritoneal cavity, is to be considered. We can rule out tuberculous peritonitis on the basis of the prolonged course. The large amount of fluid present may indicate that she had some glandular involvement or a carcinomatous mass that would press on the inferior vena cava. She did not have any edema of the lower extremities until the very late stages. The mass in the lower quadrant and the right flank immediately brings to mind the possibility of a carcinoma. Apparently she had had no symptoms of obstruction, a fact which indicates that there was no involvement of the intestinal tract. One x-ray picture showed pressure at the rectosigmoid junction, which was probably from without rather than from within the bowel. Such a mass as is described here, with the symptoms presented, would, I think, be of pelvic origin, and probably of ovarian origin. You do get a certain amount of ascites with fibromyomatous conditions of the ovary, but not to this extent. I believe that the tumor mass, perhaps benign initially, arose from the ovary, with a subsequent malignant change developing. Whether it was the type of tumor in which peritoneal implantations with production of fluid occur is the question; however, I think that in the last stages she unquestionably had a carcinoma of the ovary. I am inclined to think that this fluid was within the confines of an ovarian cyst, and, in view of the rapid regeneration, to believe that the cyst was being tapped rather than the abdominal cavity. I base that be-

lief on the varying color of the fluid. The fact that the mass was restricted to the right side leads me to believe that it was of left ovarian origin. My diagnosis is a malignant type of ovarian cyst rather than free fluid in the peritoneal cavity.

DR. J. F. MARSHALL: Is there any notation of a pelvic examination? Was she in the hospital all that time with a mass in the right lower quadrant, without a pelvic examination?

DR. T. T. FROST: There is no notation of a pelvic examination on any of the four charts.

DR. A. DET. VALK: Was there any surgical consultation?

DR. T. T. FROST: There is one consultation by the surgical service for the removal of the lymph node.

DR. W. L. GRIMES: How do you explain the deviation of the heart to the left?

DR. A. DET. VALK: That is due to the large amount of fluid in the abdomen, which elevated the diaphragm.

Clinical Diagnosis

Carcinoma of ovary (?) with metastases.

Dr. Valk's Diagnosis

Malignant ovarian cyst.

Anatomical Diagnosis

Pseudomucinous ovarian cyst—infected.
Generalized peritonitis.

DR. T. T. FROST: At autopsy we found 6 liters of cloudy purulent fluid in the abdomen and a thick fibrinous exudate over all the peritoneal surfaces. The right tube and ovary were normal. The left tube was stretched over a large rounded mass which weighed 19½ pounds. This was attached at the site of the left ovary by a pedicle 2 cm. in thickness in one dimension and 1 cm. in the other. There were several small fibrous adhesions to the right parietal peritoneum. The lower portion of the mass filled the pelvis, but was not adherent to it. The remainder projected into the peritoneal cavity and was fairly movable. On section this mass presented one large cavity which contained purulent exudate. The inner surface was covered by a fibrinous exudate. The wall averaged about 6 mm. in thickness and was composed chiefly of fibrous tissue. The lining of the cyst had been destroyed by the inflammatory reaction, but it was probably a pseudomucinous cystadenoma, as this type is more often unilocular. It is quite obvious that the cyst must have been punctured at least once, if not more times, and that the infection of both the cyst and the peritoneal cavity is the result of puncturing the abdomen. This case bears out my feeling that an abdominal paracentesis should only be done in the operating room where it can be immediately followed by a surgical procedure unless the possibility of an ovarian cyst can be completely ruled out beforehand.

CLINICO-PATHOLOGICAL CONFERENCE

Duke University School of Medicine

DAVID T. SMITH, M. D., and
ROGER D. BAKER, M. D.

A 26 year old white woman, Para IV (one abortion, three children living) was admitted with the chief complaint of chills and fever of five weeks' duration.

The present illness was preceded by a normal pregnancy of eight months' duration, and the labor was normal except for some excessive bleeding before delivery. Two days postpartum the patient first experienced a hard shaking chill, followed by high fever. One week later she was taken to a local hospital, where she was given sulfanilamide by mouth until she could no longer tolerate this drug, and she was then started on neoprontosil intramuscularly. In this same hospital she was given three blood transfusions. Five days following the twelfth intramuscular injection of neoprontosil she became jaundiced. Two blood cultures at this hospital were reported negative. Throughout her entire course she continued to have chills and high fever, but she had no unusual gastro-intestinal or urinary symptoms. She had no pain until three days prior to admission, when she developed rather severe soreness and tenderness in the region of her spleen. The patient continued to have a slight dry hacking cough without pain, sputum or hemoptysis.

The temperature on admission was 39.4 C.; the pulse was 110; respirations, 40, and blood pressure 90 systolic, 44 diastolic. This acutely ill and toxic white woman of 26 was well developed and fairly well nourished. The skin was pale with an icteric tint. No exanthem, petechiae, eruptions, or rash were noted. There was no generalized or localized

glandular enlargement. The mucous membranes were pale, and the scleras appeared yellow. The mouth was dry and the lips were scaly. The tongue was coated and dry. Examination of the lungs revealed expansion equal bilaterally, respirations rapid and shallow, tactile fremitus equal, percussion note resonant throughout and breath sounds vesicular except for one small area where moist rales were heard, just inside the right scapula posteriorly. The heart was normal in size, shape and position, with the maximum impulse in the fifth interspace. There was a diffuse impulse felt over the entire precordium, but more strongly over the pulmonic and apical areas. The rate was rapid, the rhythm regular, and a soft systolic murmur was heard to the left of the sternum, accompanied by a loud, snapping pulmonic second sound. The sounds to the left of the sternum were tambour in quality. The abdomen was flat and soft and not tender except for a very painful area just below the lateral portion of the left costal margin. The spleen was palpable at this area. It was hard and extremely tender. The liver was not felt, and no other organs or palpable masses were noted. Examination of the extremities showed the left leg to be larger than the right, with pitting edema from the ankle to the hip. There was no tenderness or increased heat of the left leg, and no cyanosis or clubbing. There was no evidence of thrombosis of the palpable veins of the legs, left or right. The remainder of the physical examination was within normal limits.

Blood studies showed 1,920,000 red cells, with a color index of .92; the hemoglobin was 5.5 Gm. or 35 per cent; the hematocrit 17 per cent by volume; the mean corpuscular volume 88.5 cubic microns; and the mean corpuscular hemoglobin content, 28.6. There were 9320 white cells, with 90 per cent polymorphonuclears, 60 per cent segmenters, 28 per cent stabs, 2 per cent juveniles, 2 per cent large lymphocytes, and 8 per cent small lymphocytes. Fresh and stained preparations were not remarkable. The sedimentation rate, corrected, was 20 mm. per hour. Blood Wassermann and Kahn reactions were negative. Stool and urine examinations were negative.

The patient was placed at bed rest on a high caloric full liquid diet with all accessory food factors added, and she was given additional supportive therapy in the form of multiple small blood transfusions, glucose intravenously and saline by infusion. Blood chemistry taken the day following admission showed a nonprotein nitrogen of 28 mg. per 100 cc., and no sulfanilamide; the spectroscopic examination was negative, and the serum van den Bergh direct reaction 3.5 mg. per 100 cc. Repeated blood cultures were negative. A bromsulfalein test showed 10 per cent retention. A second van den Bergh test made eight days after admission showed a direct reaction with 4.3 mg. per 100 cc. A bedside film of the chest showed a diffuse soft nodular infiltration throughout the lower two-thirds of both lung fields. In the right base there was considerable coalescence of the nodules. The heart appeared somewhat enlarged. We could not be sure whether this represented a pure bronchopneumonia or whether there was some pulmonary congestion. An electrocardiogram taken on the seventh hospital day was reported as normal.

In spite of rest, sedatives, diet and general supportive measures the patient's course was steadily downhill. There was a daily temperature elevation of over 40 C., the pulse ranged between 120 and 140, and the respirations between 30 and 48. She gradually became more jaundiced, and there was marked venous distention noted in the neck and in the superficial veins of the abdomen and thorax. There were increasingly frequent bouts of sharp pain in the chest, abdomen and arms, and narcotics were required for relief. Respirations became labored and difficult, the pulse and temperature continued to be high, the lungs became filled with rales, and the patient expired quietly on the thirteenth hospital day.

Discussion

DR. DAVID T. SMITH: This 26 year old white woman was apparently well until two days after the delivery of a normal child. Suddenly, without warning, she had a hard shaking chill, which was followed by high fever. She was evidently quite ill at this time, and was taken to a local hospital and given sulfanilamide by mouth for a period of days. The sulfanilamide was supplemented by neoprontosil intramuscularly. Five days after the twelfth intramuscular injection of neoprontosil she developed jaundice. This jaundice may have been due to a toxic effect of the neoprontosil, or it may have been due to the underlying disease process. Three days before admission to this hospital she developed soreness and tenderness in the region of the spleen.

The physical examination on admission showed jaundice, a few rales in the lungs, a large, tender spleen, a systolic murmur, a swollen left leg with pitting edema from the ankle to the hip. The right leg was found to be normal at this time.

The accessory clinical findings showed a severe anemia, with only 35 per cent hemoglobin and 1,920,000 red cells. The total white count was not much elevated, being only 9320, but the differential count showed marked evidence of infection, since there were 90 per cent polymorphonuclears and 28 per cent of these were stab forms. This evidence of infection is supported by the increased sedimentation rate of 20 mm. per hour. Her course was steadily downhill while in the hospital. The jaundice became more intense, the van den Bergh direct reaction increased from 3.5 mg. per 100 cc. to 4.3 mg. per 100 cc., pains developed in the chest, and the x-rays showed diffuse nodular infiltration throughout the lower two-thirds of both lungs. It was impossible to tell from the x-ray film whether this represented bronchial pneumonia, pulmonary congestion, or infarcts. She grew gradually weaker with the increasing evidence of pulmonary involvement, her respirations became labored and difficult, the lungs became filled with rales, and she died thirteen days after admission.

The sudden onset of chills and fever two days postpartum indicates that the patient had a puerperal infection. This infection undoubtedly resulted in thrombosis of the pelvic veins, and small clots from these veins periodically invaded the blood stream, giving rise to the involvement of the spleen with infarcts, probably causing infection of the liver, and most likely producing multiple emboli at the bases of the lungs. The infection in the veins must have extended, involving first the left iliac vein and causing the edema and swelling of the left leg; later by propogation of the clots past the bifurcation of the inferior vena cava the circulation was largely cut off from the right leg as well. The evidence for a complete occlusion of the lower inferior vena cava is found not only in the swelling of the legs, but in the development of collateral circulation in the superficial veins in the abdomen which were connected with the dilated veins of the neck. The upper limit of the thrombosed area will have to be placed below the entrance of the renal veins, since the urine remained remarkably free from abnormal elements.

It is not surprising that the blood cultures both originally and in this hospital were negative, since the infection probably spread by small infected emboli, and at no time was there a frank septicemia. The infection was probably not due to a beta hemolytic streptococcus, since this undoubtedly would have been controlled by the early and prompt use of sulfanilamide. One would expect anaerobic bacteria which do not respond to sulfanilamide, or possibly a staphylococcus infection. Now that we have sulfathiazole available, it would be advisable to change from sulfanilamide to sulfathiazole in cases of this type if the patient does not make prompt improvement with the sulfanilamide.

Clinical Diagnosis

1. Puerperal infection.
2. Thrombosis of the pelvic veins.
3. Thrombosis of the iliac veins and inferior vena cava.
4. Splenic infarcts with abscess formation.
5. Pulmonary infarcts with abscess formation.
6. Probably multiple abscesses in the liver rather than toxic hepatitis from sulfanilamide.

Pathological Discussion

DR. ROGER D. BAKER: The autopsy indicates that there was a postpartum infection. The evidence for this lies in the finding of extensive thromboses in the veins within the substance of the uterus and in the broad ligament. A paravaginal abscess is also present not far from the cervix of the uterus. The original infection was probably either in the endometrium of the uterus or lower down where the paravaginal abscess is now found. The latter process could have originated in a tear of the cervix. The histological reaction in these regions is all quite old, with organization of the process. The uterine system of veins on the right side, both iliac veins, and the lower portion of the inferior vena cava are thrombosed. A mural trombus lies in the last mentioned vessel and does not occlude the lumen entirely, but extends to a level just below the entrance of the renal veins.

There is no endocarditis, but there are multiple abscesses in both lungs. Small ab-

scesses are noted in the spleen, myocardium, and brain. Bacteriological studies were not carried out on the autopsy material, but sections of the abscesses stained for bacteria show exceedingly minute gram-negative cocci. These occur in great masses in the edges of the abscesses of the spleen and elsewhere.

The toxic effects of the infection are indicated by the enlargement of the spleen, which is a typical acute splenic tumor, and probably also by the enlargement of the liver, which was considerably larger than normal. Microscopically the liver shows central necrosis. The jaundice and liver damage might, of course, have been due to the injections of neoprontosil. From a study of the liver it is impossible to say whether the drug, or the toxic effect of the infection, or the drug plus the toxic effect of the infection was responsible. No abscesses were found in the liver.

Anatomical Diagnosis

1. Postpartum pelvic infection with paravaginal abscess, and thrombosis of the veins of the uterus and pelvis.
2. Thrombosis of the common iliac veins, bilateral, and of the lower inferior vena cava.
3. Multiple abscesses of the lungs; abscesses of the spleen, myocardium and brain.
4. Serofibrinous pleurisy, bilateral.
5. Acute splenic tumor.
6. Jaundice; central necrosis of the liver.
7. Gram-negative cocci in the abscesses.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Evidence: Nonexpert witness held competent to testify as to the causative factor in the production of death following accident.

The following case was an action for the wrongful death of the plaintiff's intestate, a lad of 14, who was seriously injured on December 1, 1939, while riding with his father and mother on a wagon, when the wagon was struck by an automobile driven by the defendant, who, it is alleged, was driving at an unlawful and negligent rate of speed. Death occurred on March 29, 1940. When the plaintiff—the administratrix and mother of the deceased—entered her evidence and rested her case the defendant moved to dismiss the action and for a judgment as in case of nonsuit. The motion was allowed, and from this judgment the plaintiff appealed assigning error.

The records show that the witness, mother of the deceased, during the trial in the Superior Court was asked if she had an opinion satisfactory to herself as to what caused the death of her son, and if so, what it was. Objections to these questions were sustained, and this ruling was assigned as error by the appellant. It appears from the record that if the witness had been permitted to answer she would have stated that she had such an opinion, and that she believed that the death of her son "was caused from the injury received when the automobile collided with the wagon", following which she would have explained the child's condition in detail from the time of the injury until his death, giving not only his complaints but the physical signs as she was able to observe them.

The Supreme Court reversed the decision of the Superior Court, and held as follows: "Proof of the cause of death is not confined to expert opinion evidence, and the testimony is sufficient to be submitted to the jury upon the question of whether the injuries sustained by intestate in the accident caused his death."

In substantiation of the decision rendered by the Supreme Court the Justice referred to **American Jurisprudence**, volume 20, under the head of "Evidence," pages 719-720: "Nonexpert.—The opinions of lay or nonexpert witnesses who are familiar with a person whose physical condition is in question and have had opportunity for observing him are competent evidence on issues concerning the general health, strength, and the bodily vigor of such person, his feebleness or apparent illness, or changes in his apparent state of health or physical condition from one time to another. Lay witnesses have been permitted to testify that a person looked bad, that he looked feeble, that he was lame or could scarcely walk, that he appeared to be very sick, and that he was so ill as to be beyond asking anything or in a condition to know anything." From the above reference to **American Jurisprudence** we find that the nonexpert or lay witness is allowed to testify and that his evidence is receivable in a rather wide range of instances, in addition to the specific case under discussion.

It would be of interest to know just exactly why medical evidence was not introduced in order to show the causative factor in the production of death in this case, but the records are not clear as to his medical treatment. It is stated that he spent about one month in a hospital, and there is reference by the mother in her testimony to "the medicine prescribed by the doctor". There is a possibility of course that the medical evidence available was favorable to the defendant, and was used by him. In any event the Supreme Court was at least willing to accept nonexpert evidence to such an extent that it felt that this evidence should have been submitted to the jury; accordingly, the judgment of the Superior Court was reversed. (North Carolina Supreme Court, Book 219, p. 388).

As long as reliable mortality statistics for tuberculosis have been known, young women have always been more prone to die of tuberculosis than have their young brothers or older sisters. While the general death rate from tuberculosis has steadily fallen, the death rate among young women has also decreased, but at a slower rate. The fact remains that tuberculosis is prevalent enough, particularly among young women, to warrant, in the opinion of many authorities, a tuberculin test on all pregnant women. Treatment of tuberculosis has advanced so rapidly in recent years, that with early recognition of the condition in pregnancy, it is possible in many cases to bring the baby through safely with no danger to the mother. — **National Council for Mothers and Babies.**

BULLETIN BOARD

INAUGURAL ADDRESS

F. WEBB GRIFFITH, M. D.

Dr. Haywood and fellow members, I want to thank you from the bottom of my heart for this honor that you have bestowed upon me. I realize from the bottom of my heart how little I deserve it.

In these uncertain times it is foolish for us to predict what we are going to do during the coming year. I do hope, however, that we are going to be able to add to our membership. There are many doctors in North Carolina who do not belong to this Society, and I hope we can get them on our list. I trust that every county society and every district society will use every effort to get them in.

Our country is facing probably the greatest crisis in its history. Unless we make every effort to preserve that democracy which we love the future holds nothing for us. I therefore hope that this medical society and we ourselves will do everything we can to show that we are worthy of our names and of our traditions and that, as always in the past, we shall be found not wanting.

It shall be my pleasure this year to give my whole time to the service of the Medical Society of the State of North Carolina, and if in any way the various county and district societies can be helped by me I hope you will give me the privilege of serving you.

I thank you.

Given before the Third General Session of the Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.

SECRETARY'S MESSAGE

It is my first and most agreeable duty as Secretary and Treasurer of our Society to express to you my profound appreciation for the honor which you have conferred upon me.

You notice I say our Society—this means I am expecting every member to help me in my efforts to conduct the affairs of this office so that I may be able to justify the confidence you have placed in me.

We realize that greater things than ever before will be demanded of our organization in carrying out the program of organized medicine in these times which can be characterized as no less than one of the greatest emergencies the world has ever known.

The usefulness of any organization is measured by the objects which called it into existence and the manner in which these duties are performed.

I thank you for the honor you have done me and for this opportunity for service.

ROSCOE D. MCMILLAN, M.D.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

At the meeting of the Association of American Physicians in Atlantic City May 6, 1941, Dr. Wm. deB. MacNider was awarded the Kober medal for the year 1940. This medal is awarded annually by the Association of American Physicians to one of its members for outstanding contributions in research. This is an outstanding honor for Dr. MacNider and for the state.

* * *

An extensive research program on hookworm and malaria is being carried on at the University of North Carolina at Chapel Hill as a cooperative project between the Department of Biological Chemistry of the School of Medicine and the School of Public Health, both organizations being a part of the University. This joint research is being directed by Dr. James C. Andrews of the School of Medicine and Dr. Harold W. Brown of the School of Public Health, and is aimed towards a solution of the problems encountered when hookworm and malaria infections are present in the same patient. In such cases, the administration of quinine as a cure for the malaria may be ineffective and the efforts of Drs. Brown and Andrews and their staffs are being made in the hope of solving this difficulty. The research includes a careful study of the rates at which quinine is absorbed from the small intestine in normal persons and those with intestines damaged by hookworms.

These researchers are also investigating the fate of quinine in the body and are searching for new compounds similar to quinine which are effective in dealing with the malaria parasite. The search for such products is particularly pertinent now that the role of quinine in national defense is receiving so much attention, since they may prove to be far more effective and economical in the treatment of malaria than quinine itself.

This work has now been in progress for two years and several scientific papers have been published on the subject by both groups of workers. It is supported by a grant from the Samuel S. Fels Fund of Philadelphia, the directors of which have recently extended aid to the work for a further period of two years.

News Notes from the State Board of Health

Dr. Carl V. Reynolds, State Health Officer for North Carolina, was elected vice-president of the State, Territorial and Provincial Health Authorities of North America, at their meeting in Washington. The newly-elected president is Dr. Frederick W. Jackson, of the Health Department of the Dominion of Canada and Deputy Minister of Health at Winnipeg, Manitoba. Dr. Albert J. Chesley, of St. Paul, State Health Officer for Minnesota, was re-elected secretary. The organization is composed of health authorities from the United States, its territorial possessions, and the provinces comprising Canada.

"Security for the civilian population in and around defense areas and how to secure it claimed the attention of those attending the Washington meeting," Dr. Reynolds said.

* * *

Since registration began in North Carolina in 1914, the State Board of Health has recorded 2,139,002 births, and 894,926 deaths. Of these deaths, 170,334, or 19 per cent of the total, occurred among children under a year old. If the infant mortality rate of 90.2, which prevailed when registration began, had been maintained through 1940, the total would have been 192,828. Last year, instead of 4,646 infant deaths, which was the lowest number on record, there would have been 7,312. Last year also witnessed the lowest infant mortality rate on record in North Carolina—56.3, as compared with 59.1 the previous year and 90.3 in 1914.

During the two years in which the United States was an active participant in the first World War—that is, 1917-1918 — our infant mortality rate in North Carolina was 99.2 and 98, the highest on record. War brings disorganization; it takes from the field of practice some of our best physicians and nurses. This naturally increases the hazards of pregnancy, childbirth and early infancy.

* * *

In his annual report before the conjoint session of the Medical Society of the State of North Carolina and the State Board of Health, Dr. Reynolds said:

"The Army and Navy, through the Selective Service Board, are taking 1,400,000 of our physically fit young men for mobilization purposes, but they are rejecting 40 per cent as unfit for military duty and 13 per cent as unfit physically.

"There has been a Health and Medical Committee set up by the Council of National Defense made up of members of the American Medical Association, Physicians of Medical Science of the National Research Council, the Surgeon General of the Army and Navy, and the United States Public Health Service, for the purpose of coordinating the health and medical programs."

"A really serious problem confronting us is around the Army and Navy bases during the construction period. At each base, so far in North Carolina—16,000, or more—think of it—proceed to these construction areas where there is no water, sewage or housing facilities, not even food, available. Such a situation is inconceivable unless you visit the area and see it first-hand.

"To correct this primitive, insanitary mode of living, is taxing the local and State Health authorities beyond their capacity; and it is, and has been, a Federal, State and local obligation to its citizens that has been sorely and woefully neglected."

* * *

Dr. Herman Siemens, of Alberta, and Dr. C. Doucet, of New Brunswick, have arrived in Raleigh, preparatory to spending the greater part of a month in North Carolina, studying public health methods employed here.

Each of the visiting Canadians holds a position similar to those occupied by county health officers in this state. They are in this state under the sponsorship of the Rockefeller Foundation, and the first place they visited in North Carolina was the State Board of Health, in Raleigh.

Drs. Siemens and Doucet are holding extensive conferences with Dr. Fox, in order to familiarize themselves with work being done in the eighty-one counties and six cities in North Carolina which give full-time organized public health protection. Later, they plan to go on field trips and see, first-hand, some of the activities in progress.

"We came to North Carolina," Dr. Doucet said, "because this is looked upon as a model state in the field of public health. Our observations, so far, have borne out this conception of what you are doing in North Carolina. Moreover, we are particularly interested in public health activities in the United States at this time when we of the Dominion and you of this country have so many problems in common, in connection with preparations for the common defense of the Western Hemisphere."

News Notes from the North Carolina Tuberculosis Association

Charlotte was chosen as the place for the next annual meeting of the North Carolina Tuberculosis Association. There were more than 150 people in attendance at the recent annual meeting of this association in Greensboro. The following officers were chosen for the ensuing year: Dr. C. W. Armstrong, Salisbury, President; Dr. William H. Smith, Goldsboro, Vice President; Dr. H. L. Brockmann, High Point, Secretary; Robert Brawley, Winston-Salem, Treasurer; Mrs. C. C. Hook, Charlotte, Honorary Vice President; Frank W. Webster, Executive Secretary. To serve with these on the Executive Committee the following were named: Mrs. Charles E. Platt, Charlotte; Dr. P. P. McCain, Sanatorium; and Dr. P. A. Yoder, Winston-Salem.

The following persons were chosen as members of the Board of Directors of the North Carolina Tuberculosis Association at its last annual meeting: Dr. Clyde A. Erwin, Superintendent of Public Instruction, Raleigh; Mrs. Marie B. Noell, Secretary North Carolina Nurses Association, Raleigh; Robert Brawley, lawyer, Winston-Salem; Mrs. Raymond Fuson, New Bern; Santford Martin, Editor, Winston-Salem; Rev. Excell Rozelle, Gastonia; Mrs. Fred L. Williams, Fayetteville; A. N. Bernstein, Burlington; Mrs. Ralph Harbison, Morganton; Charles Cannon, Concord; Dr. David T. Smith, Duke University, Durham; Dr. Loren Wallin, Health Officer, Wadesboro; Dr. Borden Hooks, Tarboro, Dr. Ralph L. Fike, Wilson; and W. P. Gearing, Asheville.

There were already 28 persons on the Board of Directors at Large; adding the fifteen newly elected, this brings the number of the Board of Directors at Large of the North Carolina Tuberculosis Association to 43.

* * *

The following from the North Carolina Tuberculosis Association attended the annual meeting of the National Tuberculosis Association held in San Antonio, Texas, May 5-8: Dr. P. P. McCain, Sanatorium; Dr. David T. Smith, Duke University; Dr. S. M. Bittinger, Black Mountain; Dr. P. A. Yoder, Winston-Salem; Dr. M. D. Bonner, Jamestown; Frank W. Webster and Walter S. Page, of Winston-Salem.

Dr. McCain, the President of the National Tuberculosis Association, gave an address at the annual

dinner meeting and presided at the joint sessions of the Medical and Administrative groups.

* * * *

The National Tuberculosis Association announces an Institute for Negro Tuberculosis Workers to be held under the auspices of the North Carolina College for Negroes at Durham, June 9-14.

The Institute is similar to the one held in New Orleans last year and is planned primarily to reach Negro leaders interested in tuberculosis or public health work, whether as physicians, nurses, social workers, administrators or volunteers. Dr. P. P. McCain, Superintendent of North Carolina Sanatorium, and Dr. Herman F. Easom, Chief Clinic Physician of North Carolina Sanatorium, will be members of the faculty from this state. Further information on this Institute can be secured from the North Carolina Tuberculosis Association, 406 Nissen Building, Winston-Salem, N. C.

Examinations For Appointments in the Medical Corps of the U. S. Navy

The next examination for appointments as Assistant Surgeon, U. S. Navy, Lieutenant (junior grade), Medical Corps, U. S. Navy, will be held at all major Medical Department activities on August 11 to 15, inclusive. Applications for this examination must be in the Bureau of Medicine and Surgery not later than July 15.

An examination for appointment as Acting Assistant Surgeon for intern training in naval hospitals accredited for intern training by the council on Medical Education and Hospitals of the American Medical Association will be held at all major Medical Department activities on June 23 to 26, inclusive. Students in class "A" medical schools who will complete their medical education this year are eligible to apply for these appointments, and if successful will receive their appointments approximately after the date of the examinations. Students in Class "A" medical schools who will have completed their third year of medical education this year are eligible to take this examination, and if successful will receive their appointments on or about July 1, 1942, after they have completed their medical education.

Applicants for appointment as Assistant Surgeon or as Acting Assistant Surgeon for intern training must be citizens of the United States, more than 21 but less than 32 years of age at the time of acceptance of appointment. Applicants for appointment as Assistant Surgeon must be graduates of a class "A" medical school who have completed at least one year of intern training in a hospital accredited for intern training by the council on Medical Education and Hospitals of the American Medical Association. Acting Assistant Surgeons are appointed for a period of eighteen months. After the appointee has served as an intern in a naval hospital for twelve months, he is eligible for and may take the examination for appointment as Assistant Surgeon, U. S. Navy.

A circular of information listing physical and other requirements for appointment, subjects in which applicants are examined, application forms, etc., may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., upon request.

Assistant Surgeons and Acting Assistant Surgeons for intern training are appointed in the rank of Lieutenant (junior grade), Medical Corps, U. S. Navy. The pay and allowance for an officer of this rank total $2699 per year if he has no dependents, and $3158 per year if he is married or has dependents.

Buncombe County Medical Society

On May 5 the Executives' Club Dinner orginally scheduled for March was held in the George Vanderbilt Hotel in Asheville. Dr. Morris Fishbein, Editor of the **Journal of the American Medical Association,** spoke on "Socialized Medicine".

Guilford County Medical Society

The Guilford County Medical Society met at the King Cotton Hotel in Greensboro on May 1 at 6:30 p. m.

Dr. George Wilson of Philadelphia, Professor of Clinical Neurology at the University of Pennsylvania Medical School, spoke on "Acute Involvements of the Nervous System".

Mecklenburg County Medical Society

The Mecklenburg County Medical Society held only one meeting in May, because of the State Medical Society meeting at Pinehurst. On May 6 Dr. Wallace Bradford spoke on "Intravenous Ergotrate at the End of the Second Stage of Labor", and Dr. William R. Pitts spoke on "The Use of Subarachnoid Injection of Absolute Alcohol for the Control of Intractable Pain in Malignancy".

News Notes

Dr. Rush Shull of Charlotte has been appointed a Fellow in the American College of Radiology.

* * *

Dr. William Allan addressed the New York Medical and Eugenic Society at its recent meeting.

* * *

Dr. O. L. Miller of Charlotte spoke before the South Carolina State Medical Association on "Experiences With Complications in Fractures of the Elbow and Bones of the Forearm".

* * *

Dr. Alfred Blumberg of Asheville has been assigned to Station Hospital, Camp Shelby, Mississippi, with the rank of Major.

One Cause of Fatigue.—If the fatigue and loss of "pep" and interest in life come suddenly in a person past middle age, the cause is almost certainly a small stroke. Curiously, physicians rarely think of this possibility when the thrombosis does not happen to involve the centers for speech or for arm or leg. Commonly the episode is thought to be due to an "acute indigestion" because it is so often associated with dizziness and a storm running down the vagus nerves to produce vomiting and abdominal discomfort. Sometimes careful history taking will show that there were several of these small episodes. Often they come in the morning when the patient wakes. Especially after several of them there is likely to be some loss of memory, a loss of interest and zest in life, and perhaps an inability to work. Unfortunately, this sudden and marked change in the temperament of the patient is seldom mentioned when the victim and his family are in the physician's office. The story must be dug out. It is important that the physician recognize the true nature of these little upsets because then he will know that it is useless to try to help the patient or to cheer him up. His brain is injured and he cannot be helped.—Walter C. Alvarez: What's Wrong With the Patient Who Is Always Tired? Minnesota Medicine, 23:787 (November) 1940.

WOMAN'S AUXILIARY

OFFICERS 1941-42

President—Mrs. Sidney Smith, Raleigh
President-Elect—Mrs. R. A. Moore, Winston-Salem
First Vice President—Mrs. C. R. Hedrick, Lenoir
Second Vice President—Mrs. J. R. Terry, Lexington
Third Vice President—Mrs. J. S. Hooker, Chapel Hill
Secretary—Mrs. Harry Winkler, Charlotte
Treasurer—Mrs. E. C. Judd, Raleigh

NINETEENTH SESSION OF THE WOMAN'S AUXILIARY

The Nineteenth Session of the Woman's Auxiliary to the Medical Society of the State of North Carolina was held at Pinehurst, Tuesday, May 20, at the Carolina Hotel. The Hoke and Moore County doctors and their wives were hosts and hostesses to the Medical Society and the Woman's Auxiliary. Mrs. Clyde R. Hedrick of Lenoir, President of the Woman's Auxiliary, presided. Mrs. Hedrick expressed her appreciation to her co-workers who so faithfully have cooperated during her year of office. Mrs. Hedrick gave a complete report of the year's activities, stating that the McCain Bed at Sanatorium was being occupied by a member of the nursing profession, while the new Martin L. Stevens bed, at Black Mountain, was being occupied by a member of the medical profession. The student loan fund is being used by a future doctor. It is only through the cooperation of all the doctors' wives that we will be able to continue and increase the philanthropy of the Woman's Auxiliary to the Medical Society of the State of North Carolina.

Dr. Hubert B. Haywood, President of the Medical Society of the State of North Carolina, was guest speaker to the Auxiliary. Dr. Haywood expressed his appreciation and praise of the Woman's Auxiliary in this manner: "Your Students' Loan Fund, with its ideals of worthy philanthropy, could set no higher goal. Your endowment of beds in tubercular hospitals speaks for your kindness of heart and practical accomplishments. *Hygeia*, the only thoroughly authentic health magazine in the country, is so highly endorsed by you, and your effort to put it in schools and public libraries is to be commended."

Dr. Haywood continued by saying, "The day is past when the greatest good can be achieved by individuals working alone. When the North Carolina Medical Society has had difficult objectives to attain, and has set its sight on well nigh unattainable goals, it has called upon the Woman's Auxiliary to be its lever and its prop. We will continue to need your assistance, as we are in an unsettled situation."

Mrs. C. F. Strosnider of Goldsboro, first vice president and chairman of organization, gave a fine report. Mrs. Strosnider expressed a wish that every doctor's wife in North Carolina would become a member of the Woman's Auxiliary.

Mrs. E. C. Judd, treasurer, gave a report showing how our dues work for us.

The chairman of the Committee on Research, Mrs. R. S. McGeachy of New Bern, gave a fine paper on the life of the late Dr. Martin L. Stevens, for whom the new bed which the Woman's Auxiliary will support at Black Mountain Sanatorium is named.

The chairman of the Obituary Committee, Mrs. I. H. Manning, read a beautiful memorial service in memory of our members who have passed on beyond during the year.

Delegates to the American Medical Association Convention to be held in Cleveland in June are Mrs. John Hamilton, Mrs. Harry Winkler, and Mrs. Clyde R. Hedrick.

The report of the Nomination Committee was as follows: Mrs. Sidney Smith, Raleigh, president; Mrs. R. A. Moore, Winston-Salem, president-elect; Mrs. C. R. Hedrick, Lenoir, first vice president; Mrs. J. R. Terry, Lexington, second vice president; Mrs. J. S. Hooker, Chapel Hill, third vice president; Mrs. Harry Winkler, Charlotte, corresponding secretary, recording secretary; and Mrs. E. C. Judd, Raleigh, treasurer. Appointed officers will be named later.

Mrs. P. P. McCain outlined the entertainments which had been arranged for our pleasure. Corsages in the form of exquisite orchids were presented by the hostess Auxiliaries to Mrs. Clyde R. Hedrick, president, and Mrs. Hubert Haywood, wife of the president of the Medical Society.

MRS. ALFRED A. KENT, JR.
Chdirman of Press and Publicity.

In Memoriam

ALLAN CARITHERS BANNER, M.D.

Dr. Allan Carithers Banner was born in Mount Airy on January 12, 1896, and died at his home in Greensboro on January 11, 1941. His death resulted from an acute heart attack suffered a few hours earlier.

He attended Mount Airy high school and then entered the University of North Carolina, where he remained from 1914 until 1918. The last two years of this time were spent in studying medicine. He then transferred to the Jefferson Medical College in Philadelphia, where he graduated in 1920. His internship was served at King County Hospital in Brooklyn, N. Y., after which he specialized in diseases of the eye, ear, nose and throat. In 1922, he became associated with his uncle, Dr. Charles W. Banner, in Greensboro. He was a member of the West Market Street Methodist Church, where he served on the Board of Stewards. He was a member of the Greensboro Lions Club and the Country Club, a member and loyal supporter of the Guilford County Medical Society, the Medical Society of the State of North Carolina, and a Fellow of the American Medical Association and of the American College of Surgeons. Surviving are Mrs. Banner, the former Miss Marian Boren of Greensboro, a daughter, Jane, and a son, Allan, Jr. His father, John Banner of Mt. Airy, a half-sister and half-brother also survive.

In Allan Banner's death, Greensboro has lost one of her most valued citizens; the medical profession, one of its ablest members. He was indeed a physician in the truest sense, ready and willing at all times to give of his talent and knowledge to those who sought his aid. His thought always was service to others, and there is little doubt but that this in part contributed to his early and unfortunate passing when still in the prime of life.

To those who were privileged to know intimately this quiet and unassuming man, there was a feeling of genuine affection. He was one of the most modest of men and never pushed himself forward, but always was ready to assume with fidelity any trust imposed upon him.

His attitude toward his colleagues was indeed an inspiration; in his dealings with his fellow physicians he played the game fairly and squarely, and his motto could easily have been "He lives best who serves most." His code of life is symbolized very fittingly in Foss's immortal poem:

Let me live in my house by the side of the road
Where the races of men go by;
They are good they are bad, they are weak they are strong,
Wise, foolish, so am I.
Then why should I sit in the scorners seat,
Or hurl the cynic's ban?
Let me live in my house by the side of the road,
And be a friend to man.

Submitted by
Oliver L. Sharp, M.D.
(For the Committee)

BOOK REVIEWS

The Story of Clinical Pulmonary Tuberculosis. By Lawrason Brown, M.D., Late Director of Trudeau Sanatorium; Lecturer in Trudeau School of Tuberculosis; Author of **Rules of Recovery from Tuberculosis**, etc. 411 pages. Price $2.75. Baltimore: The Williams and Wilkins Company, 1941.

This book was compiled from notes left by one of America's ablest and best loved specialists in tuberculosis, supplemented by two additional chapters by Homer L. Sampson and Edward W. Archibald. It is just the sort of book that his friends and admirers would have expected from Dr. Brown: scholarly, scientifically accurate to the minutest detail, yet clearly phrased and of fascinating interest. The history of the great white plague is traced from the Indo-Aryans, (1500 B.C.) to the most modern refinements in its treatment. We are told that Hippocrates described succussion, pleural friction, and breath sounds like "boiling vinegar". Further progress, however, was retarded for fourteen centuries by the dead weight of Galen's authority. To Laennec — a consumptive himself — credit is given for really putting on a sound basis the clinical recognition of tuberculosis by auscultation through his own invention, the stethoscope. Laennec, however, failed to recognize the disease in its early stages. This remained for the great French clinician, P. C. A. Louis, to do.

At least three North Carolina doctors are mentioned in the list of those who contributed to the literature of tuberculosis; E. C. F. Strudwick, Charles L. Minor, and Paul H. Ringer.

Proctology for the General Practitioner. By Frederick C. Smith, M.D., M. Sc. (Med.), F.A.P.S. Formerly Associate in Proctology, Graduate School of Medicine, University of Pennsylvania; Editor, The Medical World. Second edition, revised. Price, $4.50. Pp. 466. Philadelphia: F. A. Davis Company, 1941.

In this volume the entire field of proctology is intelligently covered. The more essential phases are treated in adequate detail, and ample consideration is given to every aspect of the subject. While written primarily for the general practitioner, this book should be a valuable asset to any internist's or general surgeon's library.

The Doctor Takes a Holiday. By Mary McKibben-Harper, M.D. An Autobiographical Fragment of 349 pages. The Torch Press, 1941.

Dr. Mary McKibben-Harper took a trip. She went where all tourists to the Orient go and saw what all tourists to the Orient see, except for visits to the local hospitals. From the pages not a single character emerges to be remembered—only places and things.

To all physicians many things become commonplace, but to lose all appreciation of people and of beauty is to lose also all power of happiness and all release from the woes and ills of the world. If you want a travelogue of what not to do and see in the Orient, read **The Doctor Takes a Holiday.**

New Discoveries in Biochemistry

Discoveries in the realm of biochemistry which point the way to new frontiers in the field of medicine were revealed recently by Dr. Thomas F. Anderson, RCA Fellow of the National Research Council. The methods used would be applicable in the study of such human ailments as smallpox, infantile paralysis, influenza, and the common cold. Dr. Anderson spoke before the Division of Biological Chemistry of the American Chemical Society at the Municipal Auditorium, St. Louis.

Dr. Anderson pointed out that scientists are now able to see the larger molecules under the powerful magnification of the new RCA Electron Microscope. In fact, he added, it is even possible to see reactions between individual molecules of different types.

Such reactions, he explained, are responsible for immunity to disease and even for the discomforts of ordinary allergies such as hay fever. Persons suffering from a disease develop in their blood streams substances called antibodies, which attack the disease agent, overcome the disease if the person recovers, and, in many cases, give the persons an immunity to the disease.

As a basis for their studies, Dr. Anderson and Dr. W. M. Stanley of the Rockefeller Institute at Princeton, produced in rabbits an artificial immunity to tobacco mosaic virus. They actually succeeded in photographing the virus which had been attacked by antibodies from the rabbits' blood serum. The photographs were so clear that the actual manner and extent of attack could be determined.

Dr. Anderson said that the techniques developed in these experiments are being used in the RCA Research Laboratories at Camden, N. J. as the basis for continuing studies of causal agents of human disease.

The tremendous resolving power of the RCA electron microscope, which is from 20 to 50 times more powerful than the best light microscopes, has made the experiments possible by revealing the appearance of large molecules, heretofore hidden beyond the reach of the best light microscope. The new instrument has even made possible the accurate determination of the size and shape of molecules which could only be determined before by involved and indirect procedures.

Dr. Anderson said that study of the tobacco mosaic virus under the electron microscope showed the particle to be rod-shaped, and about one-one hundred thousandth of an inch long. Measurement of the minute virus was made possible by the discoveries by Dr. Stanley of a way to separate the virus in purified form.

Exercise With Insulin. — Unusual exercise promotes the tendency to a reaction. With regular insulin or crystalline insulin one takes a little extra carbohydrate at the first sign of a reaction, but patients employing protamine zinc insulin will do better if they eat their extra quota of carbohydrate at the beginning of the exercise.—Elliott P. Joslin: *Diabetic Hazards, New England J. Med. 224:590* (April 3) 1941.

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